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A REPORT ON THE TEACHING OF SECONDARY MATHEMATICS IN FRANCE

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Programs of the secondary mathematical work of European schools have been rather plentiful among us of recent years. Many an educational moral has of late been pointed and many a mathematical tale adorned with what they are accomplishing on the other side. Numerous books and reports have been telling us many things since the century opened that put the mathematical work of French, German, and English secondary schools before us in a distinctly favorable light. As a background to assist in throwing our own delinquencies into bold relief, European secondary-school work has done many a service on our educational platforms and in educational prints. Who that reads has not heard of the high mathematical attainment of French boys on reaching the baccalaureate? Who has not read of the high efficiency of the mathematical teaching of the German *Gymnasia,* of the heuristic method as the German teacher employs it, and of the Klein reform movement in secondary mathematical education? The Perry movement has been on our lips, if not on our minds and consciences, almost incessantly for the last five or ten years.

These facts as well as professional interests in my own school induced me to spend eight months of my last year out of

residence in visiting and inspecting classroom work in secondary mathematics in Paris, Berlin, and London. To be able to see for myself the nature of the work and to feel its spirit, to sense, as one can only when in the midst of it, the significance of the educational aims and practices of the systems and the teaching as they actually show in the working, was my prime motive. It will be my attempt here to detail some of the most salient practical lessons drawn from the experiences of my visiting in France and from the work seen and studied.

It may be admitted that work seen and experienced at close range readily tends to take on a long-range character in the reporting, and still a report from actual classrooms has some values that are lacking in reports based on programs, descriptions, and professed ideals. Through an examination of what is actually being accomplished we may often find food for reflection and stimuli to minor improvement, even where we fail to go to the extent of emulation.

The oft-repeated maxim, "Paris is France," is of course not entirely correct even for French mathematical teaching. It is true, however, to a much greater extent than that any particular American city epitomizes the educational practice of our country as a whole. Nor does Berlin typify Germany, or London Great Britain, to an extent at all comparable to the extent to which Paris typifies France. And there are good reasons why Paris so closely represents France educationally.

First, the French are a more homogeneous people than are our own, or those of either Germany or Great Britain. In language, in politics, and in social and industrial ideas and ideals the sections and provinces of France are not widely divergent. Racial instincts and characteristics are essentially the same everywhere.

Second, as a reflection and an outgrowth of this homogeneity, the system of education is, and has long been, highly unified and centralized, the same programs of study, prepared in the central office, being used everywhere. Though different schools may and do stress one feature or another, or vary a little in the interpretation and administration of the program

or in methods applied in carrying out the program, all must conform to the spirit of the same program and prepare to meet the same examination tests upon their work. Here and there one may hear mild protests to the purport that initiative and originality are hereby very sorely curbed, though on the whole the tendency of teachers is to say, "The good teacher finds it in his mental constitution to conform to the program, and the poor teacher needs to be made to conform." It is not in the purpose of the writer here to criticize this point of view. The French teacher is not an American teacher, and he is entitled to his differentiating points of view.

Third, the Parisian school system is commonly regarded by Frenchmen as the capstone of the educational system of the country. Positions in Parisian schools are looked upon as the ultimate goal of every ambitious teacher, and the flower of French genius regards promotion to Paris as sufficient reward for half a lifetime of meritorious service. A very large percentage of the teachers of the schools of Paris have come to their positions through long and often varied service in the schools of outlying provinces. All this is readily explained by the circumstances that Parisian positions carry better salaries, permit higher specialization, and rank higher in dignity, and that the gay French capital offers more in the way of amenities and opportunities of life. The result is that Paris gets the pick and variety of French teaching genius. The programs are prepared by this representative body of the teaching talent of the nation.

In studying the foreigner's way of teaching a special subject, one may make a blanket study of every phase of the school work in the subject with a view to giving a sort of picture of the complete status; or one may concentrate attention upon the narrower field of the best teaching in a special subject with a view to penetrating to the spirit of teaching plans and methods, of discovering its results and possibilities in action, the causes of its successes, and the elements of its excellence. The former plan of study results in general information of professional value to administrative officials. The latter leads to narrower but deeper meanings and, it is thought, to more specific pro-

fessional worth to the actual teacher and to one whose work is with teachers. The writer, regarding it as his prime duty to signal ways of improving the teaching of mathematics, chose the latter type of study. For the following reasons then this report must be regarded as of somewhat narrowed significance: (1) the writer studied the best teaching he could find; (2) he studied only mathematical teaching, and that too of only elementary and secondary schools and institutions that prepare the teachers of these schools;[1] (3) in France, he studied only the teaching of the schools of Paris (including St. Cloud).

From what has been said above, however, it is seen that the teaching of Parisian schools has a very much larger significance for all of France than one is likely to think. Programs of study, and curricula, and instructions and suggestions to teachers, all issue from the central office and are the same everywhere, as is also the preparatory training required of teachers. The reader will be sufficiently on his guard if he is reminded that the specific things seen and studied were in Parisian schools, and any inferences from them of a special character may of course be regarded as applying directly to the schools of Paris.

It will be of assistance to the reader of this report to have before him the general time allotment to mathematics in the curriculum, with the ages of pupils belonging normally to its successive stages. Since French schools cover in ten years the ground we cover in twelve, there is no great advantage in undertaking to place the several grades of the two systems into a year-for-year correspondence. The French gain two years on us, and in mathematics more than two years, but they gain it at no particular points. They have omitted matter that we include, reorganized what they have kept, digested it so to speak, all along the route, so that the child is ahead of his American representative by more and more every year. But they also do much that we do not. In both systems children begin at six

[1] Those who are interested in the program of studies and scheme of organization of elementary education in France are referred to Farrington's *The Public Primary School System of France* (published by Teachers College), and for analogous information on secondary education in France the reader is referred to *French Secondary Schools*, by the same author (published by Longmans).

years of age, but by ten years of age the French child is more than a year ahead of the American *in mathematics*. I do not believe it is too much to say that he is nearly two years ahead of the boy or girl in America. By the end of the high school he is more than two or perhaps three years ahead of the American boy or girl in mathematics, and it has been a gradual and steady gain all along. It cannot with correctness be localized, though most of it is made before the age for entering the American high school.

It is perhaps already clear that this paper is to talk considerably about elementary-school mathematics. In our sense of elementary school, this is necessary, because the division between French secondary and elementary schools is *vertical*, rather than *horizontal* as with us. Secondary education there differs in quality, in length of curriculum, and in school constituency, from elementary education. Both elementary and secondary schools admit the child at six years of age, both lead him along pretty much the same route for four years, then the curricula begin to part company. Children in elementary schools who contemplate secondary education take an examination for admission to the secondary school at the age of ten and, if successful, enter the *lycée* or the *collège*. The studies of the elementary school here become more vocational in character, and soon take on a decided business, vocational, or trade flavor. These schools aim to prepare the boy or girl to go into useful work at the age of fourteen. They give at the end a leaving certificate which is useful to the holder in getting employment and at the normal schools. The secondary curricula here take on a more linguistic, cultural, and classic flavor, as their aim is to prepare for the professions and higher callings.

The secondary institutions, called *lycées* and *collèges*, that are fully equipped and caparisoned, as most Paris institutions are, have four years of work of an elementary character, preceding and preparing for the secondary work proper. They charge tuition and are patronized by the better-to-do families, that do not desire their children to be mixed promiscuously with the children of laborers, servants, etc. Class distinctions

are still strong in French society. I give below a table showing the age of pupils, the designation of the year, the character of the mathematical work, the number of hours a week given to it, and the total number of hours a week of work required of the pupil. The word *calcul* means what we would term reckoning with both abstract and concrete numerals, and is both mental and written, though mainly mental. Perhaps formal arithmetical operations with emphasis on mental calculation is the most accurately descriptive phrase for it.

TIME-ALLOTMENT FOR MATHEMATICAL STUDIES OF PRE-SECONDARY YEARS

Age	Designation	Mathematics	Drawing	Total
6.....	1st preparatory	*Calcul*, 3 hours	.....	20 hours
7.....	2d preparatory	*Calcul*, 3 hours	.....	20 hours
8.....	1st elementary	*Calcul*, 4 hours	Drawing, 1 hour	20 hours
9.....	2d elementary	*Calcul*, 4 hours	Drawing, 1 hour	20 hours

At the end of the last year of the above preparatory program the pupil takes an examination to test his fitness to enter a *lycée* or a *collège*. (The French *collège*, be it noted, is a secondary institution.) If he fails, he remains where he is, doing the work of the second elementary year over again, preparatory to trying the secondary examinations the next year.

But here, where the first of the two cycles into which secondary curricula are divided horizontally begins, the program of secondary work splits into two vertical branches: (*a*) the *Latin*, and (*b*) the *modern-language* branches. This first cycle includes a unity of four years of study, and equips the pupil with a definite body of well-organized and useful knowledge, so that if he is not able or willing to continue farther, the school program has done all it can to put at his disposal the most practical parts of secondary education, and to give to the matter of instruction the sort of organization and unity that constitutes it at the same time into a type of modest but real culture. At the natural breaking-point which comes thus at the close of the fourth or last year of the first cycle, many boys and girls drop out either from preference or from necessity and go to work.

From the formal and rather exacting nature of the work many pupils become tired or discouraged, or fail to see the value of the school, and very willingly drop out.

The mathematical part of the program of the first cycle is given below. The numerators of the fractional numbers standing beside the subjects indicate the number of hours a week given to the subject, and the denominators are the total number of hours a week required of the pupil by the entire program of studies. When a denominator is written thus, $23+3$, the meaning is that twenty-three hours a week are required, and that there are three additional hours of optional work.

TIME ALLOTMENT FOR MATHEMATICAL STUDIES OF THE FIRST CYCLE

Age	Designation	A. Latin course	B. Modern-language course
10.....	Sixth, VI	*Calcul*, $\frac{2}{23}$	Mathematics and Descriptive Geometry, $\frac{4}{22}$
		Drawing, $\frac{2}{23}$	Drawing, $\frac{2}{22}$
11.....	Fifth, V	*Calcul*, $\frac{2}{23}$	Mathematics and Geometrical Drawing, $\frac{5}{23}$
		Drawing, $\frac{2}{23}$	
12.....	Fourth, IV	Mathematics, $\frac{3}{23+3}$	Mathematics, $\frac{5}{23}$
		Drawing, $\frac{2}{23+3}$	
13.....	Third, III	Mathematics, $\frac{3}{23+3}$	Mathematics, $\frac{4}{23}$
		Drawing, $\frac{2}{23+3}$	Bookkeeping and Accounting, $\frac{1}{23}$

Here, where the study of Greek begins, each of the above branches splits again into two lines of study, running through the *second cycle,* which consists of another unity of work of three years' duration. Below is given the time schedule of mathematical studies.

Here the examinations for the baccalaureate are taken. Then comes another year divided first into *classes de la philosophie* and *classes des mathématiques,* each of which is divided into two sections, designated Section A and Section B.

Students destined to the higher institutions which make strong demands in mathematics for admission often remain in this post-baccalaureate year for the second, or even a third, year of study, to insure their ability to meet the entrance demands. The writer is quite definitely of the impression that the average age of boys leaving this last work is nearer eighteen than six-

TIME SCHEDULE OF MATHEMATICAL STUDIES OF THE SECOND CYCLE

Age	A. Latin-Greek	B. Latin-Modern-Language	C. Latin-Science	D. Modern-Language-Science
14	Mathematics, $\frac{2}{24}$ Drawing, $\frac{2}{24}$	Mathematics, $\frac{2}{24}$ Drawing, $\frac{2}{24}$	Mathematics, $\frac{5}{26}$ Geom.Drawing, $\frac{2+2}{26}$	Mathematics, $\frac{7}{27}$ Geom.Drawing, $\frac{2+2}{27}$
15	Mathematics, $\frac{1+2}{22+4}$ Drawing, $\frac{0+2}{22+4}$	Mathematics, $\frac{1+2}{25+6}$ Drawing, $\frac{0+2}{25+6}$	Mathematics, $\frac{5}{25}$ Geom.Drawing, $\frac{2+2}{25}$	Mathematics, $\frac{7}{27}$ Geom.Drawing, $\frac{2+2}{27}$

THE MATHEMATICAL TIME SCHEDULE FOR THE POST-BACCALAUREATE YEAR

		Classes de la Philosophie		Classes des Mathématiques	
		Section A	Section B	Section A	Section B
Age 16–18	Mathematics.....	$\frac{2}{22\frac{1}{2}+4}$	$\frac{2}{22\frac{1}{2}+4}$	$\frac{8}{27\frac{1}{2}+2}$	$\frac{8}{28\frac{1}{2}+2}$
	Drawing.....	$\frac{0+2}{22\frac{1}{2}+4}$	$\frac{0+2}{22\frac{1}{2}+4}$	$\frac{2+2}{27\frac{1}{2}+2}$	$\frac{2+2}{28\frac{1}{2}+2}$

teen. The boy, however, who enters at six and makes a year of the curriculum every school year will finish at sixteen. But he is the exception. The program of studies is very heavy, and it may be said with a sufficient degree of liberality to cover the case that only the best third or fourth of the pupils succeed in doing this. The program seems to have been planned with a view to giving the bright boy all he can do, and with the idea that the mediocre and average boy must expect to drop behind by a year or two before reaching the end. This is only one of the evidences to the onlooker that the French system of education looks primarily rather to the development of the few highly

endowed persons than to the raising of the general level of all. It is perhaps fairer to say the primary aim seems to be to encourage and foster genius, and the secondary aim is to raise the general level. The thought that it is better to develop one genius highly than to raise by a little the ability of a thousand mediocre persons, which breathes through French educational literature, is reflected in more ways than one in the national system of education.

It appears from the time assignments given above that in the first and second preparatory years *calculation* takes more than 14 per cent of the pupil's school time, while in the first and second elementary years it takes over 22 per cent of his time. The drawing is what we would call form-work and partakes about equally of a free-hand and of a geometrical character. Counting half of it as mathematical, it is about correct to say that the pupil gives 22½ per cent of his school-time during the latter two years to mathematical study. As a result the pupil is here able to add, subtract, multiply, and divide whole numbers and simple common fractions; to understand the decimal notation, and to use with skill the metric weights and measures. The work thus far has centered on technique. The French boy can do better rapid mental calculation than the American boy ever learns in school to do. To any of us this looks like a stupendous performance, but it is actually accomplished in Parisian public schools. It is not too much to say that the French boy is better off mathematically here than the American public-school boy is at the end of the sixth grade. The work has been formal arithmetic, and geometrical drawing and sketching.

Counting one-half the time given to drawing as mathematical, as seems justifiable from the nature of the work, the percentages of the pupil's school-time required for mathematics through the four years of the first cycle are: in the Latin course, 14 per cent, 14 per cent, 14 per cent, and 22 per cent; in the modern-language course, 22.7 per cent, 22 per cent, 22 per cent, and 22 per cent. Through the second cycle of two years the percentages run thus: in the Latin-Greek course, 12½

per cent, 4½ per cent; in the Latin-modern-language course, 12½ per cent, 6 per cent; in the Latin-science course, 23 per cent, 24 per cent; and in the modern-language-science course, 30 per cent, 30 per cent. In the post-baccalaureate year the percentages are: in the philosophy course, 11 per cent; in the mathematical course, 33 per cent.

To put the results in a little more convenient form for comparison, we may say that on entering upon secondary education proper the French child has spent 19 per cent of his school time on mathematical study; on reaching the baccalaureate he has spent 14.7 per cent or 21.1 per cent or 22.6 per cent, according as he has chosen the classics, modern languages and science, or science and mathematics. At the close of the post-baccalaureate year the percentages under the circumstances just mentioned are 14.2 per cent, 22.4 per cent, and 23.6 per cent.

Anyone who is interested may readily convince himself how far the most exacting mathematical requirements of American public schools fall below these figures. This comparison will of course have little significance with those who are sure that mathematics is taking too much of the program time with us. It will have significance with those who would like to see our country assume something like a favorable place among other nations in mathematical culture and productivity.

It may be well to mention also that in many of the years of the French program the above figures may be modified by election of optional work in mathematics and drawing. The modifications, be it noted, will invariably increase the above percentages of time given to mathematical study. Few indeed of our school principals will find mathematics taking the lion's share of the program time in anything like the French measure.

In looking over my notes I find that I saw in the schools of Paris the actual classwork of forty-eight different teachers of mathematics, in seventy-four exercises, thirteen of which were two-hour exercises. Twenty-one of these teachers and forty-four of the class exercises were in *lycées* and *collèges,* which, as has been said, are the secondary institutions. A prominent French teacher said recently in public that the best definition of

French secondary education is that education which is given in *lycées* and *collèges*.

As samples of the kind of work of the later secondary classes visited the following may serve:

On November 10, 1910, I visited a two-hour class exercise of forty boys preparing for the military school, and doing the work in the special type of mathematics required of such classes in the post-baccalaureate year. The boys were eighteen or nineteen years old. The teacher was a man of about fifty years.

The room was fitted with parallel rows of benches without backs, with bench-like desks in front of the seats to support the notebooks and inkstands. No texts were in evidence, but every boy had a fat notebook, in which he struggled to get down all that the teacher said that was new. In this classroom much descriptive geometry is done. The blackboard is rather larger than customary, being about 1½ by 2½ meters. The room was rather poorly lighted by a single large window.

The theme with which the recitation opened was *descriptive geometry*. Papers which the professor had gone over and marked were handed back to the pupils, and the professor spent some five or ten minutes commenting on the errors and misconceptions that the papers had revealed. A boy was then called to the board to discuss a proposition having to do with the projection of an ellipse, and after completing its discussion he was given two or three further propositions about the projections of intersecting planes. The boy talked, sketched free-hand, demonstrated, and stood the fire of class criticism for about fifteen minutes. The teacher acted as moderator. The boy was then excused and a second was called. The second boy went through a similar experience, the professor acting as umpire between him and the class, and after another fifteen-minute period he was excused. No rulers were used in the drawing; rapid free-hand but altogether satisfactory sketches served to guide the thinking, and this was all that was insisted on.

The professor then announced that he would proceed with a *composition* on algebra. He began in a sort of lecture-dictation method with the consideration of equivalence conditions for

two general polynomials of nth degree in real coefficients, illustrated his theory by applying it to the separation of fractions into partial fractions, and to reducing fractions to a common denominator. Then followed in order: (1) The addition of algebraic fractions; (2) The subtraction of algebraic fractions; (3) The multiplication of algebraic fractions; (4) The division of algebraic fractions; (5) The general law of proportionality by composition; (6) The general theory of exponents for positive integral exponents; (7) The general law for negative integral exponents. Points (6) and (7) included the laws of exponents for products, quotients, powers, and roots, all complete. Of course the significance of the zero-exponent had to be provided for also. The drum roll then closed the two-hour period of work. The exercise was made up of discussion of previously assigned work on descriptive geometry, work before the class by individual students also on descriptive geometry, and then lecture work by the teacher on pure algebra for nearly one and one-half hours. It was the pupil's task to take notes and by the next recitation—two days later—to have his notes well assimilated. The amount of work covered seemed tremendous, but the recitations on it later showed it to have been well understood.

On the same date I visited a one-hour class exercise, also called a *composition.* Here there were thirty-five boys from thirteen to fourteen years of age. The room was fitted in about the same way as the one described above, though it was smaller and lighter.

The professor at the board (1×3 meters) dictated, explained, and talked on several problems and propositions that were assigned to the class to be worked out and incorporated in their notes. The work was plane geometry. Samples of the exercises are: (1) A diameter perpendicular to a chord of a circle bisects the chord and also the subtended arc, and reciprocally; (2) Two equal chords subtend equal arcs and reciprocally; (3) Equal chords are equally distant from the center, and reciprocally; (4) Of two unequal chords the shorter is nearer the center, and reciprocally. There were in all six such proposi-

tions, the proofs of which were roughly and quickly sketched by the professor.

The rest of the hour was spent by the teacher in giving a view, retrospectively and perspectively, of some twenty fundamental propositions on the geometry of the circle, some of which had already been studied by the class, and some not.

The object of the work seemed to be to make use of the knowledge the pupils already had of the geometry of the circle, as a vantage-ground from which to get a first somewhat complete view of the whole of what we should call the book on the circle in our standard texts. This exercise furnishes a good example of a kind of teaching in which the French are more skilful than we are: viz., in giving a carefully summarized exhibit of an entire topic, or subject, in something of a bird's-eye-view fashion, *before* it is completed. This connects and puts fuller meaning into the daily tasks, which are apt to impress the pupil in a piecemeal fashion. This exercise seemed to come when the class was about half done with the subject. American secondary teachers might well emulate this phase of French teaching.

These class exercises are selected almost at random from my notes, and will serve as well as any to give definite ideas as to the type of work that goes on with a French mathematical class. It should be said that in nearly every case when the teacher begins to develop the work himself he uses the plan of *direct deductive exposition*. The pupil has his opportunity, however; but it is after the professor ends, or before he begins. The pupil is rarely, in most cases never, allowed to interrupt the professor with a question. In the first place, the professor does not want the simplicity and the completeness of his exposition marred, and in the second place the interruption is regarded as a mark of discourtesy, not to say rudeness, that a pupil is unwilling to show his instructor. More than once the writer heard a pupil sharply chided for asking a question at an improper time.

In the younger classes I found two or three teachers that made some use of the heuristic plan of teaching. This method,

so widely and so successfully practiced in Germany, is taking root in France. In the vast majority of instances, however, the teacher is looked upon as the direct leader, and in a few cases the leading gave way to driving. In no case did the question as to whether subject-matter more palatable to young pupils could not be found seem to be of concern to teachers, or to pupils either, for that matter. The general attitude seemed to be, this is the medicine needed, and the question of its taste is of no consequence. The pupils are willing followers. This curbs initiative, you say; but is it not an art quite as difficult to acquire and as well worth learning, to hold your question in thought and bide your time, as to manifest initiative? And the French do produce great mathematicians.

The first of the exercises reported above shows a striking characteristic of the mathematical teaching. The first part of the exercise period was devoted to geometry and the second part to algebra. Geometry and analysis are developed side by side, sometimes in close correlation, sometimes in quick alternation, and sometimes in parallel courses. But whether the plan be parallel courses, or interwoven and interrelated work, the ideas of both algebra and geometry are always at hand, and either may be called into requisition at any moment. As this interrelated work is handled by French teachers there can be no question that the simultaneous teaching of the two subjects is superior to the tandem arrangement of our own programs. In any recitation a pupil may be called upon to show the geometrical form or significance of an algebraic conclusion, or vice versa. The pupils of the later classes take this as a matter of course, and often do it of their own accord. Every algebraic solution must be fully discussed, and most must be geometrically interpreted. As a teaching procedure this mode is well worked out and systematically practiced, not as a diversion or recreation or as a mere test, but as a means of giving a deeper and completer grasp of the meaning of what is done. It certainly makes for solidity of thinking and firmness of grasp.

The misconception is widely prevalent among us that the French pay no attention to the professional preparation of

secondary teachers. Before 1902, indeed, there was no such thing as professional preparation required, but the younger teachers are quite awake to the problems and difficulties of practical teaching before they enter upon practice. In 1902 a series of conferences under the auspices of the *musée pédagogique* of Paris were held to study the needs and possibilities in this matter. Reports were made of the practices of Italy, England, Austria, Germany, and America with regard to the professional preparation of secondary teachers, and these conferences, which were participated in by the leading teachers and *savants* of the university, resulted in getting the Sorbonne to take over the responsibility of giving to intending secondary teachers certain courses dealing with the history of education and with the specific problems of teaching the several subjects. The courses were held for a time under the auspices of the *musée pédagogique,* and were later entirely turned over to the university and the higher normal school authorities, where they now constitute an essential part of the work of intending secondary teachers. I was told that the chief difficulty in the way of getting the courses started was the lack of faith in them on the part of the university professors. That is now overcome, however, and many of these professors give the special courses for the particular subjects every year. Every intending secondary teacher is required to attend the general education courses for a year, and the special courses for a semester, and the record he makes in them becomes a part of his regular university record, on the basis of which he is later assigned employment. After attending these courses dealing with the theory of teaching, both in general and particular, the candidate must go into a designated secondary school to observe and study teaching, prepare lesson plans, and practice as a cadet under supervision and criticism. His record in this work also becomes a part of his university record, along with that of his academic work. Although these courses are light, since they must be taken in addition to the full complement of academic courses that were required before the professional courses were started, yet they run through two years and give the student a definite

point of view with regard to the history, aims, and methods of French education. The year I was visiting, Professor Dürckheim was lecturing once a week at the *Ecole Normale Superieure* on the history of education, and the courses were crowded. Professor Tannery usually gives the special professional courses for mathematical teachers, although Professor Borel assumes the duty at times. The students regard these courses very highly. They are having a favorable influence on teaching.

Some of the characteristic features of class-work observable in the schools visited were:

An immense amount of note-taking, particularly though not exclusively in the secondary classes. At the age of ten, and even before, the work of teaching children how to take notes begins. The pupil must depend on these notes to mediate for him between the remembered spoken instruction and the textbook.

The complete absence of textbooks from the recitation rooms. The pupil must depend for his recitation on what he has learned or remembered. Textbooks, which are generally very good transcripts of French teaching, are plentiful enough with the book-dealers, but one wonders who buys all these texts. The pupil must make his notes full and complete, and depend upon them for the work gone over.

The extraordinarily serious attitude of pupils and teachers toward the schoolwork. Teachers teach with all their might, and pupils struggle with might and main to take it in.

Hard work, perfect order, military obedience, and at least outward respect for elders.

The absence of initiative, spontaneity, buoyant enthusiasm. Schoolwork seems to be all of life, rather than a part of life, as we would have it. It swallows up well-nigh every other concern for the child. He must labor with great diligence now, that he may live more completely some time in the future. There is no place or use for play, and not enough real childish joy and childish interest in the work to suit us. Almost from the outset the pupil must take the sophisticated attitude of the

adult toward his work. If there is too much youthful spontaneity in our schools, the French surely have too little.

Direct methods of exposition and recitation dominate classroom procedure. The pupil is nearly always passive, seldom volunteers, and is chidden if he does forget himself and ask a question when the teacher is lecturing or engaged in some other form of class exercise than quizzing. In a few cases the old-fashioned dictation plan was used by teachers, but these cases are rare and rapidly becoming obsolete. In the exercises called compositions there are times when the pupil may, within rather narrow limits, assert himself. Generally he will be made to feel very quickly that his own views do not count for much with the teacher. In the writer's opinion the only boy who will get much training in independence and self-assertion is the one who knows his subject perfectly, and knows that he knows it. Perhaps he is not the one most in need of this type of training.

The great power of teachers over the scientific aspects of their subject is strikingly noticeable. Contrasted with this is the rather feeble ability of teachers to vary their method, to adapt it to the diverse needs of individuals. Each teacher has his way—usually a decidedly good way, be it admitted—of developing his work with his classes, but practically he is to a considerable degree a servant to his method. If a first presentation does not suffice for any reason, a second presentation will be only a repetition of the first. This lack of flexibility is perhaps in part a consequence of lack of professional training. If the great academic power of these teachers were matched by an equally great professional power, and guided a little more—considerably more—by the learner's point of view and difficulties, the rest of the world would indeed have to look to their laurels. As has been said, the French are already beginning to supply the necessary supplementary training for teachers.

The tremendous influence of examinations on teaching and study can hardly escape notice. In the public schools no disposition to criticize this influence as harmful to the school work was found. In private schools some protests were heard, but it was said that parents are in favor of the plan of extra-

curricular examinations, and so the private schools all find it politic to comply. The only means that the French educator seems to have confidence in as a measure of attainment is the examination. Everybody seems to accept the verdict of examinations without protest. Some may say that there is no need to protest. It would only make trouble. If, however, the results of school work are the sole consideration, it must be admitted that this examination plan is highly efficient in France.

The general, though not universal, disposition of teachers to accept ready-made programs with which they have had nothing to do is impressive to an American. All seem willing to take the attitude of being merely agents to administer what the government office sends out. Still, the programs are flexible enough to allow each school to work out for itself a sort of individuality. There are no hard and fast demands as to how results shall be accomplished. Each school, and to a very considerable extent each teacher, may apply any methods to reach the specified ends. Certainly new ideas can be got into execution in French schools more quickly than they can with us.

The simultaneous teaching of arithmetic, algebra, and geometry, with early emphasis on the geometry and delayed stress on algebra, is a striking feature of the French plan. Perhaps enough has been said on this point. Geometry begins with arithmetic and algebra starts two or three years later. Mathematics and drawing are closely related in teaching.

In the light of the variety of work found in different schools among us, the essential sameness of the work in all French schools, both public and private, is obtrusive.

It should be said that the Socratic or heuristic method of presentation is gaining in popularity in France, and some teachers are beginning to use it with satisfactory results. Certainly some type of heuristic method for presentation, accompanied, or, better still, supplemented with something like the clear and simple expository method of the French as a recapitulation of the subject or topic in its entirety, would seem to be almost an ideal procedure for teaching. The heuristic plan is analytic, disintegrating; the expository plan is synthetic, unifying.

It has already been said that the French boy at the end of the secondary curriculum is about as well off mathematically as the American college or university student at the end of his sophomore year.

It would have been a gratification to the writer to have had with him, while visiting elementary-school classes in arithmetic, some of our school men who oppose the introduction of the metric system of weights and measures. The most important single reason that the French accomplish more and better results in arithmetic in five years than we do in eight is the immense simplification of the subject due to the use of the metric standards. Through them, with which children have already acquired an out-of-school familiarity, the decimal notation is taught. The concreteness and reality of these weights and measures and the perfection with which they fit the notation and operations of our decimal system make it comparatively easy to teach at a very early age what we find difficult enough two or three years later. Of course all admit that this must be so, but to see its results in the schoolroom is an argument in favor of the adoption of the metric system which is little short of overwhelming.

The doctrine of formal discipline is still in good standing among French mathematical teachers. Writers on general education talk much of the distinction between education and training. The modern doctrine of pragmatism is well known in France. Real and applied problems of a genuine sort are being rather seriously thought about for teaching purposes in mathematics. But the reasons for the school study of mathematics that one hears most frequently from teachers are mental discipline, culture, taste for mathematical study, and technical skill in mathematical thinking. Ability to think logically comes in for its share of attention. The idea of a school subject as reflecting some life-need, of mathematics as standing for a particular kind of thinking that we cannot afford to dispense with, receives warm intellectual recognition, but is of no great force in shaping programs and modes of teaching. Tradition and habit are most powerfully operative in actual practice. Perhaps

the ideal of mathematical education for which most secondary teachers would contend is the utilization of mathematics as an instrument to form the intelligence and the tastes and to inform the mind with a supply of useful material for thinking. The central thought around which they would build the secondary mathematical edifice is the notion of functional dependence, and programs are soon to be recast, or revised, to incorporate this ideal more completely and effectively in practical instruction. If practice in this regard falls below profession and ideal it does so to no greater degree than it does amongst us, and no outsider is more clearly conscious of the shortcoming than are the French teachers themselves.

The following are some of the principal reform movements in mathematical education which are just now interesting French teachers:

In analysis, it is proposed to introduce the function notion from the beginning and to make it the central and developing idea throughout the school course. As a practicable means of accomplishing this the extensive use of graphical methods and procedures is being planned and is already in partial operation. As the capstone of the course in analysis, differential and integral calculus are to be given full treatment, sufficiently complete for all technological purposes. Much attention is being paid to the reforms being advocated in Germany by Klein and his followers, with the determination to introduce many of them.

In geometry, reforms that are already far along are the teaching of plane and solid geometry simultaneously, and in close correlation with one another. The extended use of the idea of motion in geometry is being urged and is a practical reality in the work of many teachers. A textbook of geometry written in 1874 by Professor C. Méray of the University of Dijon and basing the treatment of geometry very largely on the idea of motion, a book that seems to have attracted very little attention for many years, is just now arousing great and general interest among teachers. This is partly due to the appearance of a new and somewhat simplified edition of the text

in 1906. French teachers seem to regard the book as unfit for the use of the pupils but of extremely great value to teachers.

A larger use of practical problems in teaching is being advocated, and the author of a complete set of secondary texts which are widely used told the writer that he was searching for practical problem-material for the preparation of a more satisfactory set of texts.

It has been remarked above that the heuristic method is being introduced. It is advocated in one form or another for both algebra and geometry, and the writer saw a few instances of its use. The method most strongly urged is a composite, consisting of the heuristic plan for developing topics and the expository for recapitulation. The advocates of this method would analyze a topic with the class under the heuristic plan, and then synthesize the dismembered parts by direct exposition. This heuristic-expository plan, in the writer's opinion, embodies more elements of efficient secondary mathematical teaching than any other type of method he has seen in operation.

DOES THE PRESENT TREND TOWARD VOCATIONAL EDUCATION THREATEN LIBERAL CULTURE?[1]

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In attempting to give an answer to the question which is put before us this morning for discussion, it has seemed to me best, for my purpose at least, to take a rather round-about method of answering, and first sketch for you something of the great changes which have taken place recently in our conceptions as to the nature and function of public secondary education.

Starting originally as an outgrowth of and a slight variation from the old Latin school and the academy, with a limited curriculum, and with its right to existence questioned in the courts in almost every state north of the Ohio and the Potomac and east of the Mississippi, the public high school has gradually been accepted by our people and has been established as one of the important institutions of our democratic society. Unlike the European secondary school, our public secondary-school system is one "of the people and for the people," and the best interests of our democratic life demand that we always keep it so.

When the high school first arose, and during the greater part of what may well be termed the period of its struggle for existence, the need of higher education for any large percentage of our people was relatively slight. With an elementary-school system of very meager proportions still in its infancy; with the principle of general taxation for education scarcely established; with little surplus national wealth; with few of the pressing problems of government, industry, and human relations, with which we of today are so familiar, as yet markedly in evidence; and with but a small percentage of our present organized knowledge as yet available for purposes of instruction: it is readily

[1] Presented at the meeting of the Harvard Teachers' Association, March 4, 1911.

understandable that the high school of the earlier period was very limited in its scope, and was demanded by but a very small percentage of our people. Latin, Greek, and mathematics constituted the backbone and the bulk of all instruction, and the school was useful chiefly as a preparation for entering some one of the denominational colleges of the time.

The past fifty years, however, have witnessed very great and very significant changes in every feature of our national life. Almost nothing is or is done today as it was fifty years ago. Steam, steel, and electricity have wrought an industrial revolution during the past half-century greater than that wrought during the entire preceding period of our colonial and national existence. The whole character of our people, too, has changed, and many new social and industrial problems have been forced to the front by the rapid increase in population and by the development of factory and urban life. From a somewhat static condition, our whole national life has become dynamic to an extent never known before in the history of the world. The old type of community life has given way to new types; old ways of doing things have been abandoned for new ways; many new fields of learning have been developed and organized; new sciences have been evolved and put into form for instruction; time and space have been largely annihilated; invention succeeds invention with almost startling rapidity; and new problems of many kinds, previously unknown, now confront us on all sides. We live in a new world, and the need for new and larger knowledge to enable us to understand it and to cope with the new conditions has almost everywhere become apparent.

The public elementary school has been enlarged in scope, enriched in content, improved in character, and been transformed from a mere teaching-institution into an important instrument of democracy, and the public tax-supported high school has everywhere experienced a new and an unprecedented manifestation of popular favor. The development of secondary schools since 1890, and particularly since 1900, has everywhere been remarkable. Even in the South, burdened as it has been by its

poverty and by the necessity of supporting a school system for each race, we find a general manifestation of a conviction that the maintenance of a system of secondary education is a public necessity. In the Mississippi Valley and in the far West the development has been remarkable.

The somewhat aristocratic nature of our earlier education has vanished, so far as public education is concerned. No longer do we publish a list of the occupations and standing of the parents of the high-school pupils to show that such schools are not patronized chiefly by the children of the well-to-do and well-educated classes. The common man, too, now believes in the high school, votes for it, pays such taxes as he can to sustain it, and makes many personal sacrifices to send his children to it, because he sees in it a chance for his children to rise. Free state universities, too, have been founded everywhere except in the North Atlantic group of states, and these have done much to provide still larger educational opportunities and to train leaders for the higher service of the state. We have gradually, yet rapidly, approached an era of universal education—of education for all kinds of people and for all kinds of needs.

With the ushering in of this new era we have seen the secondary school subjected to much searching criticism. The past two decades have been particularly fruitful in this respect. The old principle of formal discipline has been seriously questioned; the problem of educational values has been pushed to the front; new definitions of education and of liberal culture have been insisted upon; new relationships between the secondary school and the college have been forced; and entirely new conceptions as to the purpose and function of public education have been evolved. With the gradual evolution of the new conceptions as to the purpose and function of public education, and particularly of public secondary education, there has been a gradually increasing demand that our secondary schools should more thoroughly meet the needs of the new classes in the population who have turned to them for help and enlightenment. Today this demand has become so insistent that it cannot be resisted much longer.

The demand for the enlargement of the work of the secondary school has come largely from without and has been resisted, rather stoutly, by the secondary-school men themselves. In this resistance they have been greatly aided by the somewhat rigid and usually very conservative entrance requirements of the colleges. What has sufficed for a past generation is too frequently insisted upon as satisfactory for a future one, regardless of vastly changed national conditions. Schoolmasters, in fact, usually know little about national conditions, or look upon their work with anything of the eye of a constructive statesman. National industrial and technical needs, commercial needs, agricultural needs, and economic and social needs have meant little to the average high-school teacher or principal, and almost nothing to the average university professor. Courses of study for the high schools and entrance requirements for the colleges have been fixed in line with safe, sane, and conservative precedents, and with almost no reference to national or social needs. Each new subject has had to fight its way in. The modern languages, regardless of their great usefulness and value, are as yet on an inferior plane compared with their less useful ancient competitors, while the whole field of language teaching needs to be illuminated by modern pedagogy. The sciences have had a long struggle for recognition, and even today the number of schools offering good instruction in biological as well as physical science is altogether too small. The manual-training or manual-arts high school usually arose in response to demands of trade and industry, was pushed into the school system by citizens, and was at first vigorously opposed by many men engaged in educational work. The commercial courses have been put into our high schools largely as a concession to public opinion and not because of any conviction that they would prove to be of any educational value; while the new commercial high school, now in process of development, has usually owed its inception to business interests, and today finds few colleges ready or willing to receive its students. The agricultural high school, which has developed almost wholly within the past decade, and which, more than any other previous

addition to our secondary-school system, has come in response to a strong popular demand, is as yet almost unrecognized except by the agricultural colleges. Other new subjects, such as domestic science, household management and economics, industrial chemistry, and all forms of instruction along trade lines, are to be found today in but a relatively small number of schools.

Schoolmasters have been and to a large extent still are an ultra-conservative body. The average schoolmaster too often lacks imagination, as well as any deep insight into democracy's problems and needs. The tendency with him is to follow rather than lead, and the impulse to defend academic traditions is still very strong. Many high-school and college men thoroughly disapprove of the new secondary-school subjects, and speak with deep regret of the passing of the old-time standards and the old conception of the educated man. The wonderful results accomplished under the old classical training are pointed out as evidences of the great efficiency of the old-line subjects; and the old-type course of study, it is still maintained, is the only "liberal" one. When it is suggested that some of the new subjects of study might be added, the reply too often is that the old subjects "fill the course" and the newer subjects can be admitted only by the omission of those of proven worth. This attitude is, perhaps, only natural. The training and technical preparation of both teachers and principal have been along the old lines, they see the results of it in their own development, they know little or nothing about the new subjects of instruction, they have never thought much about questions of educational values or the adjustment of instruction to individual needs, and they have never worried their heads about enlarging the usefulness of the high school by trying to attract a larger number of students to it.

With this attitude one may at the same time feel both sympathy and impatience. That the old classical-mathematical training did give good results in many cases in the past we must readily admit: but we must also remember that at that time it represented almost the only form of higher training

available; that those who took it were the picked boys of the time; and that secondary education then and now differs in both purpose and scope. Still further, the old classical-mathematical training was vocational then to a high degree, and practically everyone who amounted to much pursued the training with both liberal and professional ends in view. This is no longer true for any other than a certain small and constantly decreasing percentage of those of high-school age. The majority today need other forms of training to meet the demands of the future, and the most severe criticism now directed against the high school is against the attempt to subject all who come to this same old form of discipline and training, when many new and different forms of training are now available to meet the differing national and individual needs.

No longer do our public secondary schools minister largely to the intellectual needs of the boys of a few of our older, wealthier, or better-educated families, but today our high schools are open to both sexes and are cosmopolitan to a wonderful degree. It is one of their points of strength that they are so. Many of those who attend are not even picked children, except in the sense that they represent the more energetic and ambitious of the class and race from which they come. From a national point of view, this, however, is no misfortune. The standard of scholarship may, for a time, be slightly lowered, owing to the presence of many of only average capacity; but if the instruction offered is properly adapted to individual needs the result will, in the end, be good. Even capacity is largely a relative term. The girl who cares nothing for Latin or ancient history may prove to be an excellent student in mathematics, chemistry, and household economics; and the boy who cares nothing for Tennyson's *Princess* and is bored by Scott's *Lady of the Lake* may write good descriptions of experiments in chemistry or physics and distinguish himself in the study of agriculture. We need to use more than one measuring-stick for scholarship and capacity.

It is just to this flocking into the high school of large numbers of children from classes which heretofore have not attended it

that much of the present popularity of the high school is due. The common man has seen in it enlarged possibilities for his children, and now, having voted for it and supported it, he is demanding that the secondary school shall meet the educational needs of the large number who have to be housed and clothed and fed, as well as of the smaller number who turn to the learned professions or to a life of cultured ease. He wants an education for his children which shall be vocational and liberal for them in the same sense that the old classical training was and still is vocational and liberal for the few. We share his hopes and help voice his demands because we realize that the common man with a good and efficient education is a common man no longer, and that education for efficiency is the natural corollary of a system of democratic education.

Our secondary-school system stands today, as it were, at the parting of the ways. The opportunity is very large for the schoolmaster, if only he is able to see its possibilities and act. The new subjects of study have undoubtedly come to stay and their number and scope will doubtless increase with time. If our school authorities are wise they will aid all worthy efforts to expand the present high school, to incorporate into its courses of instruction as many of the new subjects as are needed, and perhaps to extend it upward in time so as ultimately to do the first two years of college work, and thus make of it a great institution for popular education and for training for efficient living. If, on the other hand, our school men cling too tenaciously to tradition, are too conservative, and fear to venture upon new lines of instruction or to offer what the colleges do not in advance thoroughly approve of, they will undoubtedly see new and more popular schools grow up by their side and draw away from them their students and their revenues, just as the old church colleges have been left stranded by the competition of the more liberal and more efficient state universities.

The safety of the classical or traditional high school, except in perhaps a few sheltered spots, lies in its ceasing to be exclusively or even largely classical; in the incorporation into its work of the new scientific and vocational studies; and in the

abandonment of fixed four-year courses of study made to fit average boys or girls. The secondary school, if it is to realize its highest educational purpose, should be pre-eminently a place for the testing of capacity, the development of tastes, and the opening up of vocational opportunities of many kinds. This involves intelligent oversight and direction on the part of teachers and principals; a rich and varied curriculum from which to select; and freedom from hard and fast prescriptions. All cannot be educated successfully according to one model, or even a small number of models, and the present attempt to do so results in many discouragements, many withdrawals from school, and many life failures. One of the best things a high school can do for a student in it is to teach him to make intelligent choice—to select from among many possibilities and within certain limits the thing that is best for him. He will of course make some mistakes, but they are his mistakes, and he learns from them, while the net result is probably more likely to be a more intelligent selection of studies for him than any fixed program which may be laid down for him from above.

One of the best high schools of which I know—one which attracts a large percentage of pupils from the eighth grade, one where the number dropping out is small, and one which does much for all of its students and helps them to start successful lives—is a large city high school where classical, scientific, technical, commercial, agricultural, and domestic training exist side by side. The effort of the school authorities has been to get the best teachers in each subject that good salaries would attract, to equip each department well, and then to let each subject stand on its merits. Excellent work is done in practically all departments, and the support of the school by the people of the community is a pleasure to see. The training which a boy or girl receives in such a school is better and broader, no matter how narrow the course of studies pursued, than would have been obtained by the same pupil in a school representing but one line of secondary training. The best results will always follow when as many subjects as possible, and as many vocations as can be provided for, are taught side by side in the same school

and under the same management. Not only is the opportunity for individual choice greatly enlarged by such a procedure, but the youthful student in any line will leave the school with a broader and saner educational outlook by reason of continuous contact with students following other lines of work.

What most of our high schools stand most in need of today is a great enrichment of the high-school curriculum by the addition of scientific, technical, and even vocational studies. The linguistic, historical, and mathematical studies have for long been those of the traditional high-school course, and they have for long enjoyed the benefits of a high protective tariff levied in their favor by the entrance requirements of our colleges. It is time we lower this tariff wall and make a larger place for the newer and to most high-school students the more important subjects.

In far too many cases today the student who attends the high school has no other choice than to follow the so-called "liberal" or "general-culture" course to its completion, and when he has done so he finds that it has fitted him for nothing in particular, and that at its end he is left stranded because he has had little that in any way fits him for any occupation in which he can earn a respectable living. Of efficient and practical education we are not likely to have too much—but of informed incompetence and educated incapacity we already have a large surplus supply. From a national point of view it is always dangerous to educate a boy, and to a certain extent also a girl, with no reference to vocational ends, and we may well pause and reflect when we see great numbers of our brighter young people saturating themselves today with a mass of knowledge that can have little application to the lives which most of them must inevitably lead. Disappointment and discontent are almost sure to be the result, and disappointment and discontent among its educated classes are not good for any nation.

From the argument which I have so far produced you have doubtless been led to infer somewhat the nature of my answer to the question submitted for discussion here today. In answering it, however, let me interpret both vocational educa-

tion and liberal culture in a rather broad and liberal way. What constitutes vocational education has been defined differently by different men. Some would restrict the meaning of the term to industrial training only, but as I conceive vocational education the term should mean something much broader. The same is true of the term liberal culture, which ought not to mean only Latin and Greek, or even the languages, literature, and history.

The whole question of what are liberal and what are vocational studies can be defined accurately only in terms of individuals. What is vocational for one is liberal for another. The study of chemistry, for example, which is usually classified with the technical-vocational group, and is so for the future chemist or engineer, is broadly liberal when pursued by the classical student. The same is true of geology, biology, economics, or modern industrial history. Conversely, courses in literature, world history, economics, and the life and literature of Greece or Rome would be liberal studies to the technical or the scientific student. Perhaps no greater mistake in terms is made in our educational practice today than to say that the high-school student who has had four years of Latin, three of Greek, four of English, two of ancient and mediaeval history, two of mathematics, and one year of mathematical physics has pursued a "liberal-culture" course of study. As a matter of fact his course has been narrowly technical, in that it leads to but a few selected occupations; and he is in no sense liberally educated, for he knows little about the modern world in which he lives. Of the great modifying conceptions which have served to distinguish the nineteenth century he knows almost nothing, and he is ill prepared to take his place as an efficient member of the twentieth century.

To the speaker there seems very little to fear and very much to commend in the present trend toward vocational training, and he cannot see that the trend in any way seriously threatens true liberal culture. The introduction of courses in mechanic arts, commerce, agriculture, and household arts will attract to the schools great numbers who in the past have found little of

interest in them, and will offer to all classes the chance to combine vocational training with a good education. To the speaker it seems indeed unfortunate that so many young people have been and still are compelled to choose between a vocation without an education and an education without a vocation. That the introduction of these new subjects will result in a decreased percentage of our young people studying Latin and Greek is not to be denied. Indeed, it is much to be hoped. This, however, would be no blow to liberal culture. Some of course obtain liberal culture with such training, and for them it may be the best training possible; but on the other hand many do not, and for such the insistence that such studies are essential to liberal training is no longer tenable. If we conceive of liberal culture as coming from a study of those subjects which develop the judgment and understanding, enlarge the vision and insight, broaden the human sympathies, train for efficient living, and stimulate such intellectual ambitions as will make one interested in his life work and good company for himself, then liberal culture may come to many different individuals from the study of many different things. A conception of the theory of evolution and of a few of its applications to modern life, such as may be obtained in a study of biology; the great mind-expanding (and I might also add religion-developing) results obtainable from a study of astronomy; a fair understanding of economic laws, obtainable from a study of economics; the growing conception of world relationships, such as may be obtained from a study of commerce or industrial history; the wonderful results of modern science, as opened up by a proper study of physics and chemistry; the awakening and refining of the practical judgment of the girl, such as comes from good courses in domestic science and household economics; or a study of the life, manners, art, government, and literature of Greece or Rome, such as might be given for non-classical students, wholly in English, and in a single year in a modern high school—any one or all of these may be liberal studies in the truest sense of the term, and the starting-point of a life lived in sympathy and in increasing contact with the best in our intellectual in-

heritance. Such studies as I have enumerated are both liberal and vocational, according to the needs of the boy or girl who studies them.

That the present trend toward vocational education—technical, commercial, agricultural, domestic, and even vocational in the narrower sense—will undoubtedly force a more general acceptance of new definitions of what constitutes liberal culture can hardly be doubted, but that it will do aught to decrease the number, either actual or proportional, of persons possessed of a good sound education may well be doubted. One of our prominent college presidents has recently defined an educated man as one who uses his native tongue, in both written and spoken form, with a reasonable degree of accuracy and precision; one who habitually uses gentle and refined manners; one possessed of the power and habit of reflection; one who has the power and desire to keep growing; and one who lives an efficient and useful life. Judged by these standards, the new subjects of study in our secondary schools possess great potential worth.

DOES THE PRESENT TREND TOWARD VOCATIONAL EDUCATION THREATEN LIBERAL CULTURE?

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I want simply to present to you this morning a few points of view, as they are developed in the experience of the practical social worker, with regard to what I think, after what we have just heard, we might call the new liberal culture.

The first indictment which the social worker brings against the old liberal culture is that it was never able to develop a sufficiently strong motive to bring about a movement for universal and thorough education. It provided comprehensively and effectively a training for life for an exceedingly small fraction of the rising generation, and it seemed impossible for it to get farther. It was only when the new motive of vocational training began to come in, and we began to test our results socially, that we came to see how extremely deficient our system was as a means of preparing the whole of the new generation for its work in life, or even as a means of bringing to the surface and making available to individuals the productive powers born in them.

Your chairman said that I had had the privilege of addressing you a number of times, and I think each time that I have spoken to you I have made use of a quotation from Professor Marshall's *Principles of Economics*. I am going to do it again. After discussing the sources of national wealth and productivity he comes to the question of personal productivity, and he says that the laws which govern the birth of genius are inscrutable. Genius appears in all classes of society. He says it is possible that not so large a proportion of geniuses is born among those classes which have not inherited or acquired educational privileges, but as the working classes outnumber the others four or five times it is more than likely that more than

half of the geniuses of each generation are born among the working classes. He goes on to say that a large part of this ability is wasted and lost simply because it happens to come from lowly parentage and has no opportunity to develop. He goes on to say that there would be no form of national investment that would increase so quickly and so broadly the national wealth as such improvement in secondary education as would prevent this loss.

The greatest educational good of the greatest number was never sufficiently developed under the old cultural point of view. It was really a leisure-class ideal; an ideal which had to do with the progress and prosperity of certain so-called liberal professions; an ideal which, developed out of aristocratic conditions, always looked askance at, if not down upon, manual labor; an ideal which greatly emphasized the consumer as against the producer, and thus tended among great sections of the people not only not to equip them for the struggle of life but in some sense to sidetrack them; for a great many of our most serious moral evils and political evils come from the fact that our scheme of education is so accentuated on the side of the consumer and so weak on the side of the producer, fitting out our whole body of young people with a complicated variety of wants and no equipment of developed capacity to enable them to meet those wants. Whenever that unbalanced sort of condition exists in a person's nature it makes that person essentially a gambler. He wants in some way or other to get something for nothing. He has not really been trained to see that the great joy of life is not in consumption at all but in production. The productive motive is the great note that is being emphasized by the vocational movement in education. And from that point of view it represents a wiser and sounder and broader and more real form of culture than we have had in the past.

There have been a great many instances, perhaps not enough to establish the conclusion, but instances which certainly are very suggestive, where the kind of culture produced by our educational system in the past, when it has been thrown out

into the world to compete with the type of capacity which general life in the world produces, has been outstripped. It has very often happened, for instance, in the business development of this country during the last generation, that the man who had been trained in college, and perhaps by an academical type of professional course, when he got out into business found himself outstripped by the man who had not had that training. In a great many large business enterprises it has been rather a tradition that the first man was not a college man. His lieutenants were college men. They provided the expert services; but the leader was in a great many cases, if not in a majority, not a college man. In other words, the cultural type, after the old standards, was outstripped by the barbarian.

The new vocational type proposes and hopes to alter educational standards and methods so that this barbaric impulse which is born in the whole rising generation will be conserved and developed, and not sidetracked, dissipated, and made unavailable. I think that there are undoubtedly a great many cases where college training takes a young person who has a rather special grade of executive power, and, partly by neglecting that power and partly by minimizing its value, sends the young person out of college with that priceless quality less available than when he went in. And in so far as that is true our cultural system must be modified; it must be reorganized from this productive, vocational point of view.

A great movement to increase to the last degree the number of young men and young women who enter upon their life vocation trained for that vocation certainly ought not to take anything away from the cultural opportunity of those who have the privilege of the long academical education. And as to the vocational students themselves, I think the most striking testimony that comes from the industrial schools is the fact that the school somehow or other reveals the student to himself. You read the testimony of young workmen who have had the privilege of a vocational training. They say, "This course showed me what I could do; it enabled me to understand and appreciate my own powers." And we all know how important that is in

getting young people to take a true view of life. They do not know what they can do, and the more narrowly cultural scheme of education does not provide those young people with the means of bringing their powers out so that they can understand them. A certain variety not only of interest but of equipment and of technique is necessary in order to reveal the whole variety of talent and ability to its possessor.

The new ideals of vocational training are particularly dignifying certain kinds of occupation. They are dignifying the mechanic, bringing him more onto the social level of the professional man. They are dignifying the farmer, introducing all sorts of new opportunities into his professional and his social life. Above all, they are dignifying the housewife, both as producer and as purchaser, lifting the work of that great calling to its proper level of importance and social recognition.

Vocational training also is bringing home to everyone something of the conception of the universal range of science and art which is an essential part of the cultivated point of view, an essential to the mind of the cultivated person in these days. It is showing that in every sort of calling, no matter how humble it may be, there are lines that run out into infinity, there are infinite mysteries surrounding it, infinite possibilities of development in that direction, infinite new fields for the application of intelligence, an infinite number of new possibilities to be worked out. And that atmosphere thrown about the work of the ordinary people is an astonishing means of bringing them into the spirit of culture, as a class, an astonishing means of bringing them as a mass into a point of view where they are vastly more susceptible to the idea of culture and vastly less in antagonism to the development of the broader and higher type of culture.

The great reason, certainly from the point of view of the social worker, why the new ideals of vocational training are not going to undermine the broadly cultural conception is that we have in these days what is practically an entirely new conception of what vocation is. The reason, I think, why manual labor has been looked down on in the past, why a certain few

vocations have been considered the privileged vocations, why education was considered to lead to them almost exclusively, was that those vocations had about them the dignity of social service. They were not thought of merely as ways by which one could eke out a livelihood. Now we are coming to see today, under the new social conception, that every kind of calling not only has before it the possibility of having the dignity of social service, but that it must more and more be considered by everybody as having value only in so far as it renders social service. That conception raises every calling into a wonderful new significance. It brings into it and places all about it that broad atmosphere of being in touch with a larger life. It gives it that note of humanity which is supposed to distinguish culture. It gives a universal, catholic feeling to every kind of human occupation, and that test and standard is being specifically applied in all the vocational schools and vocational courses. It is perhaps the one common note that runs through the whole movement for vocational training. It is more and more the note which the teacher strikes, the note of new and powerful authority which the teacher is coming to have in helping to get the young person launched on his career. Study that young person, find out in what direction his productive capacity runs; and by showing him not only the directions in which his inherent abilities go, but in showing him the needs of the community and the great opportunity which the community represents to him as a social producer, the teacher has a new and unparalleled opportunity of bringing to bear on the spirit of this young person those very influences which we have associated with the idea of liberal culture.

About some of the so-called liberal professions there has been also an atmosphere of ethical primacy in the past. There has been a conception that there are certain callings which demanded of the person who entered them a very exceptional degree of devotion, an unusually high ethical motive. Now the new vocational standpoint is bringing about a very different sort of perspective in this matter. We are beginning to see that under this social conception there is not any calling in life

which has the ethical primacy. No calling is essentially more sacred than any other calling, from the point of view of social service. And every young man or young woman going out into whatever calling is appropriate to him or her is gradually coming to learn that he or she is going out into a sacred calling because it has in it this broad opportunity for enlightened social service.

The vocational motive offers new and very unusual opportunities for developing the initiative of our young people. It has been too much the case in the past that we thought of the cultivated person, in much the same way as of cultivated soil, as having been thoroughly plowed and harrowed by the agencies of instruction. We have not at all sufficiently thought that you have not an educated person at all until you have developed his own initiative and self-reliance. We settlement workers find that to a very large extent the very bright young men and women coming to the settlement-house from the college have the conception that their work has all got to be predigested for them. We throw them right out into the work and, to a considerable degree, let them choose their own methods; and it is a very rude shock to them to be compelled to make bricks without straw, to find the raw materials and work them up for themselves. Vocational training is going to build up our system of education in those respects.

Vocational training is going to give us new resources for training the pupil in honesty. We all know that has been one of the earlier claims for manual training, and it has grown stronger as the educational movement has gone along, that the handling of materials has a great effect in developing that fundamental side of character.

Vocational training is also going to give much better opportunity than we have at present in our schools for drawing out the passion for perfection, which is the distinctive thing in all good work, and which is perhaps the finest and best thing in life. We all of us know from our own experience how often it has happened that a person has gone along through the more broadly cultural courses and not been thoroughly roused. But

when he got into the vocational school or the professional school, then he seemed to get his second wind, this passion for the fine points in achievement began to come over him. Is it not important that we should even in the strictly cultural stages of education introduce more opportunity in the way of developing this motive, particularly in those in whom it is not drawn out first of all by the more literary courses?

The older type of culture was particularly abstract, it seems to me, in what it had to offer to the woman. We can all of us remember not many years ago when the women's clubs of the country were devoted almost entirely to what they thought was culture—music, art, literature—and undoubtedly they accomplished some valuable educational results in that stage of their career. But then there came a time when the women's clubs began to see a new opportunity in the way of social service. It is very interesting and almost amusing that in this state one of the first really important things that the women's clubs of the state did, in connection with the state legislature, was in a movement for reducing the number of tramps in Massachusetts. The women's clubs of the state did useful service in this connection. They decided that, far cry as it seemed, the tramp question was specifically a question for the women of the state. It was the woman in the farm-house who was being terrorized by the tramp, and it was the woman who was thoughtlessly giving to the tramp at her door that kept up the great number of tramps in the state of Massachusetts. The movement was successful, and we all know that the women's clubs of the state have kept right on with social legislation as an important interest. They do not give nearly so much time as they formerly did to purely literary topics; they give more time to certain broad social and public questions. The new conception of vocational training, the training of a person to do skilfully and with a broad social motive the distinctive thing which that person is particularly equipped and born to do, is offering to the women of the country an opportunity of stepping in a perfectly natural and normal way from their home life and neighborhood life, in which they have authority and thorough knowl-

edge, out into those phases of social and public welfare in which their instinct and training can render them of the very greatest service.

The school, then, we want to make more and more a training-ground and a council chamber for the actual affairs of life. Has it not been true too largely that the school has been open to the same criticism which a new group of production engineers are making against the organization of the workshop? They say that in the average large factory the head of the plant has said to his lieutenant in the past, "It is up to you," and the lieutenant has said the same thing to the man next under him, and he has passed it along, and so on down to the man at the bench; and practically some of the most vital points in the conduct of that factory have been put up to the man at the bench, instead of there having been a regular scheme through which the men with the highest intelligence and training could bring those qualities to bear right down the line. The school, as it considers more and more the specific detail of the problem it is going to confront, as that thing is more thought over and worked on in the school, is going to bring the vast body of man's resources to bear in the matter of social development and progress.

I remember that in college I got a great deal more out of the little informal social gatherings that certain teachers had with some of the pupils in the evening than I did out of the real courses of instruction; and I think that in vocational education, its motives, particularly on the social side, are going to make it easier for the teacher to come into that sort of relation with his pupils, so that the school will represent simply a little group of senior and junior students together preparing for the actual problems of life. By that I do not mean to say at all that there are certain specified subjects which alone are open to that method. I think we have had it said this morning that every study has in it large possibilities for developing this vocational or social motive. Every study is both vocational and cultural.

This new motive will also bring all our schools into a great deal more vital and helpful reciprocal relations with their gradu-

ates than in the past. When the vocational motive gets thoroughly at work in the school, the school will need its graduates a great deal more than it needs them now. The need will be felt a great deal more than it is now. The teacher will feel the importance of getting the help and co-operation of the graduates who have gone out from under his instruction into the various callings of life and are endeavoring to apply a higher degree of intelligence in those callings. Those graduates will have a great deal to contribute to the success of their school. There will be a much larger community of interest between former pupils and present pupils than now. So we shall be able to take right out of the life of the community a great new co-operative influence in the line of more united educational work.

Our whole scheme of modern cultural study dates back to the days of the Renaissance. It came out of a reaction against a crystallized system of education, against a crystallized philosophy of life; the men of the Renaissance began to inquire where they could find a study which had the very quality of present actual life in it. The reason why they took up the ancient classics was not because the ancient classics offered special ways of technically training the mind but because they had in them the secret of spontaneous life. In our best instruments of culture, using the word from the old point of view, the thing in them that gives them their value is that quality of contemporariness, that quality of being actual in the day in which the particular piece of literature was written. Now is it not true that every great age to a very large extent has produced its own cultural point of view out of its own materials? Even when it has gone to the past for inspiration, has it not been true that that past inspiration has been thoroughly infused and transfused with the facts and the forces of the day present when that cultural agency was created? In other words, is not the actual work of life, fully rounded and balanced in perspective, the only real culture, and is not that the kind of culture which we want our young people trained in just as surely and thoroughly as we can? The highest inspiration comes in the ful-

filment of life and not in any way of sidestepping life. We are all in great danger of thinking that the ideal life of the past and the ideal life of the future is more or less some other condition than that which actually confronts us; but in fact the really cultivated person is the person who knows how to find all the real opportunities of life in the situation which lies immediately before him.

We need to have and to develop in education certainly not any less of those fine spiritual values which went with the old ideal of culture, but we need to eliminate from culture, as from religion, the "otherworldliness"; we need to bring it strictly into this world. When we do that we shall find that perhaps the greatest secret which modern enlightenment has brought to us is that the way to influence the infinitely great is by learning how to master the infinitely little. The tiny plant has in it a subtle substance through which possibly the whole world may be revolutionized. We have been too much carried away by the conviction that the distinctive power of the big man is in handling big things. I wonder if the distinctive power of the big man is not in handling little things. Find a really big man and you will find a genius for details. I was talking to a financial man of New York City the other day about J. P. Morgan. He told me that one day he went to see Mr. Morgan about an account which was certainly a small thing to him, and that when the case had been stated Mr. Morgan touched a button and said to the clerk who appeared, "Bring me File No. 231." He had so complete a grasp of the details of his business that he was able to place his hand on this small item at once.

The apparent smallness and narrowness which seem to go with vocational training, with having the teacher apply himself to the guidance of young people vocationally, is all in the appearance. There is there a fulcrum through which the teacher can accomplish marvelous results that have been impossible to him, in the way of knowledge, not only of the economic opportunities of the children, but of their souls as well. Let us remember that work has its sacraments as well as adoration, that there is a spirituality in this new point of view with

regard to education in all the different kinds of services different kinds of young people can render, such as has not been available to us in the past. Let us remember that it is true in culture, as in religion, that while the sacrament of remembrance has its value the great sacrament is that through which the highest and finest and best that the human race has ever learned in the past comes vitally and designedly into action in the present.

DISCUSSION

MR. H. W. HOLMES.—I regret that I cannot take up this question from the other side, as suggested by your chairman; but I have no disagreement with the first two speakers. My own conclusion about the matter is the same in essence as theirs. Furthermore, I am not able to take up the question from the point of view of present practical experience in the schools. I shall, therefore, hardly discuss the previous papers at all. I shall attempt instead briefly to present a new way of looking at the question, a new way of thinking about it, a scheme for deciding values and classifying them. Let me say at once that no such scheme of thinking about a question as I am going to present is at all exhaustive; it is simply suggestive.

First, I would look at all education as preparation for the relations of life. That is to say, education must prepare us for complete living, and complete living divides itself according to the various relations into which the individual enters. I have certain great normal relationships, certain points of contact with my fellow men and with nature. Education is preparation for these associations. That is one way of looking at it, and it seems to me a profitable way for the purpose of deciding the question we have before us this morning.

That being so, I should divide education into three kinds—cultural, liberal, and vocational. Cultural education may roughly be defined as education which prepares us for the leisure associations of our lives. Liberal education is education which prepares us to enter profitably into those relations in which we are workers, but not into the one central relation of our lives which we call our vocation; it is preparation for the serious duties which come upon us outside of our main work—duties as members of the family, of the state, and of various voluntary organizations. I enter, for instance, into a civic organization to do a definite work. That is not my vocation, but an avocation; yet it is not a matter of leisure. It is not play but work. Various duties of that kind fall upon every one of us, and liberal education I should define as education which prepares us for those duties. Vocational education prepares us for the one central work in life which supports us.

Now I believe that the vocational relationship is the central relationship of a man's life. It is the relationship on which the others depend practically, the relationship in which he ought to be educated most profoundly, most completely, and most effectively. To be sure, the work of the world imposes upon most men now a vocational relationship in which they can very meagerly express themselves, a relationship in which their chances to be themselves really, to do work that, as Mr. Woods has put it, is sacramental, is very small. The operator of a machine in a factory is reduced by the industrial system to work which means very little to him and in which he can express himself very little. Perhaps then I am speaking

of an ideal relationship in the case of such men; but for those of us who work under what President Eliot calls "humane" conditions our vocational relationship is the most significant, in many senses, of our lives. In all cases it supports the other relationships.

Well, then, ought not education to center about the vocational relationship? If it were preparation for an ideal life it certainly ought to center about that relationship; and as, by one means or another, we gradually produce a state of affairs more like the Kingdom of God on this earth, perhaps education can be increasingly thus centered. Meanwhile, education for one's job must, practically speaking, in the lives of most individuals, exclude somewhat education for one's pleasures, and perhaps somewhat also education for the great avocations and duties presented by life in the family, the neighborhood, the state, the church, and other social relationships. Perhaps it is true that if we establish vocational training, calling into it a good many individuals who would otherwise have gone into training that is cultural and liberal, we do, in that sense, threaten liberal and cultural training. But I should agree with what Dr. Cubberley said, namely, that for the individual this is sometimes no loss but a great gain, even in the preparation that he gets for the cultural and liberal relationships of his life. To center his education about his vocation may really be to stir up within him springs of interest in culture which would otherwise remain undiscovered, and to inspire him with the desire and give him the opportunity to prepare for the relationships of his life other than his vocation. While to center his education as an individual about the relationships which he enters in his leisure, or about those duties less central in his life than his vocation is to become, may be to give him less preparation for those very relationships themselves.

It is true, no one of these kinds of education can be totally separated from the others. Vocational training may give us much preparation for the liberal and the cultural relationships of life; and so with the other kinds of education—they may prepare us for our vocation. No education is complete that does not include some training of all three kinds—liberal, cultural, and vocational.

MR. W. B. SNOW.—In discussing any question the first essential is a clear understanding of the terms, and in attempting to answer the question before us this morning I found great difficulty in first getting a clear understanding of the subject. That difficulty was enhanced by the fact that on the first and second pages of the program it is somewhat differently stated. On the first page it is, "Does vocational education threaten liberal culture?" and on the second, "Does the present trend toward vocational education threaten liberal culture?" I assume the second is the complete statement of the question.

We must first, then, ask what is the present trend of vocational educa-

tion; and are we to read it "the present *trend* of vocational education" or "the *present* trend of vocational education," with the word "present" written big? And what do we mean by "liberal culture"?

When first our ancestors were settled on this shore the farmer worked in his field and the lumberman in his forest. Vocational training was given them by the knowledge gained in the neighboring forests and fields. But they soon found in their lives certain needs, the vocational training for which could not be given by their normal activities, and so they established the university, the vocational university, to train preachers, lawyers, teachers in a form of vocational training which the normal activities of life did not provide. I claim then that public education from the beginning has been vocational, and that it has been along the lines of those needs of the community for which the normal activities of life did not provide.

Later on, men found the need of other forms of vocational training, and felt that in business the man of pleasing address achieved a success which the man trained at home, trained in the village, did not attain. So they sent men to college to give them that knowledge of accounts, that knowledge of social relations, which would benefit them in a business way. From the beginning of the history of education it has been largely vocational, and never has there been a larger proportion of students than today in the fields of pure culture. Each community has sought the particular type of vocational training which the normal activities of life did not provide.

Today what does the farmer need for a satisfactory training in agriculture? His papers are full of such terms as soil chemistry, soil analysis, heredity, cross-fertilization. He must be a mechanic. He must know all about the gasoline engine. He must know the principles and construction of windmills. He must understand market and financial quotations. And he must know transportation facilities. It is no longer enough to hoe and dig in the ground.

A community has the right to demand two things of its schools: first, that training of its young people which will count in the furtherance of its own life interests; and second, the opportunity for the boy or the girl to develop that in him which will be of the greatest value to himself as well as to the community. The present trend of vocational education is simply an adaptation of these demands to the varying needs of the community, which now finds special training as necessary for its farmers, its traders, its mechanics, as for its preachers, lawyers, or doctors.

What are we to understand by "liberal culture"? I maintain that the essential of liberal culture is a broad human sympathy. And there are two elements in that: first, knowledge and appreciation of human achievement in a broad way, and second, the power and will to serve humanity. I regret that in the past too often we have restricted that knowledge and appreciation of human achievement to art and literature, to the more ab-

stract topics. I believe that the man who works with wood or metal and achieves a mechanical masterpiece experiences the same feeling of pride in his work as the man who makes a great painting or a great book. And the little child when he puts one block on another for the first time experiences a thrill akin to that of the man who rounded Peter's dome. We have no right to restrict culture to painting, we have no right to restrict it to literature. Humanity demands that we extend it to the watch, to the complex machinery of the mill or factory, to the knowledge of the processes of illustration, to every branch of activity which serves in extending human progress.

Does this trend today threaten liberal culture? On the contrary the movement today to open educational possibilities to every boy who feels in himself the germ of any power, literary, artistic, commercial, or mechanical, is a promise and not a menace.

But behind it all there is a danger and a great danger. Unfortunately, liberal culture has not been attained in many cases in which we have been led to look for it, in the past. The man who sits at his desk and teaches and simply attempts to show a fine examination to reflect credit on his school is not an example of liberal culture. He is distinctly something less than a mechanic. On the other hand the man on the street shoveling gravel with the purpose in his mind of making his job satisfactory, who looks upon his road with visions of the bridal train and the stream of commerce to pass over it, is doing a cultural work and gets cultural joy from it. The danger is not that we shall teach different subjects but the danger is that we shall put at the head of our classes a man whose vision is bounded by the job of today, dollars and cents, immediate remuneration, instead of instilling into the boy the fact that the greatest joy in life is in a good piece of work well done. Teach the boy to work for the community. Teach him that the miner may be mining the ore that will go into the pen with which an Abraham Lincoln may sign an Emancipation Proclamation. Administer the schools with the feeling that every boy is a human being to be developed, show the teacher that for him the task is to draw out all there is in that boy, to make him the most effective, happy member of the community that it is in that boy to be made; not ceasing to provide for the pupil with scholarly capacity, but laboring with equal solicitude to train to some efficient, dignified service, ennobled by self-respect and altruistic purpose, the boy whose tastes are commercial or mechanical. Then the present trend toward vocational education will itself minister to the highest type of liberal culture. In that way it is not a menace. But let us see to it that the men at the head of affairs are men who administer them with the full understanding of their import, and with the full motive, not to teach a little of this or that subject, but to teach the boy the rightness and happiness of useful living.

MISS FLORENCE E. LEADBETTER.—As the only representative of a purely vocational school on the program this morning, can I do better than try to

show you just what we are doing and leave you to decide for yourselves whether we threaten liberal culture or not?

It is hard to believe that anyone who knows the men who have been most active in promoting vocational education (needless to mention names in this presence) could think for a moment that these men, identified as they are with institutions of liberal culture and earnestly upholding the highest standards in education, would be found supporting any form of training which could threaten liberal culture. Rather must he believe that these men because of their devotion to liberal culture have been the first to discover that vocational training is but another means of making education more liberal, but another device for keeping our boys and girls a little longer under cultural influences. The question of the day is, "Does vocational education threaten liberal culture?" But I wonder if the real issue here is not, Do the vocational schools threaten the cultural schools? If this is the vital question, and I believe it is, we must answer, "No, and yes." The vocational schools do not threaten the stability of the cultural schools but they threaten to revolutionize them. How can there be any antagonism when the two schools differ in degree only and not in kind, the schools of liberal culture turning out our doctors, lawyers, and politicians, and the vocational schools our useful citizens? No, not in our time, nor for many generations, need the schools of liberal culture tremble; for they are bulwarked by tradition and buttressed by reverence for the book; and, more than all, liberal education means an easy, lazy, go-as-you-please, prolonged period of youth, with dances and sports and all sorts of good times thrown in. Vocational training means long hours, close application, the constant discipline of responsibility, and little time for play. Girls come to us from the elementary schools or from the high schools in which they have failed, stay a day or a week, and then withdraw because the hours are too long, or the work too steady, or, as one mother said, "because the school is not fly enough," and they return to high school or study music "because they do not need to work," or go into candy factories or get a job as cashier if they do.

President Garfield interpreted education, not long since, as "enlightenment and service": a definition which exactly serves our purpose; for while the cultural schools have emphasized enlightenment, the vocational schools lay stress upon service. No girl stays in our Trade School who has not made up her mind to service. It may be for money, but more often it is for love; sometimes for the sake of an overworked mother, often for little brothers and sisters, but always it is to do something for somebody.

We realize that acceptable service is the fruit of efficiency, that efficiency springs from character, and that character results only from a clean body, mind, and spirit; so we begin in the laundry, and while the outward girl is being led into ways of cleanliness by means of hot water, soap, and sulphonaphthol, the inward girl is morally sandsoaped and disinfected; for the

vocational school has a tremendous hold in this respect. Our girls know that we cannot and will not recommend them to employers unless they are trustworthy, and clean in speech and habits; and it is surprising to see how few there are who lack the moral stamina to try to come up to the standard.

These girls come to us for a trade that will enable them to earn a living; and please remember that each and every one is at least fourteen years of age, and under the laws of Massachusetts can go to work; and work they would as bundle-girls and chocolate-dippers or some such poorly-paid blind-alley occupations, were they not persuaded of the better condition of the girl with a trade.

We try the girl in one trade and another, on one machine or another, until we discover where her aptitude lies; then she learns that not only is efficiency necessary but that originality, invention, initiative, will place her above her fellows and secure for her a coveted position. Many a girl who could not be coaxed to the Art Museum to see a Greek marble or a Roman coin will walk there any day to find a design for a hat ornament or just the right tones for a bit of embroidery. The girl who would normally have finished her school life two years earlier is, while learning her trade, continuing her study of English and business arithmetic, learning something of textiles and machines, of trade conditions and labor laws, of hygiene and housekeeping; for we believe that every girl should be a home-maker. Does this sort of education threaten liberal culture?

I have said that the vocational schools would revolutionize the schools of liberal culture, and I believe it. We are leading the way in caring for the individual, with only fifteen pupils to a teacher. We study the need of each girl, and develop her particular aptitude. We have no classes or grades or terms. Each girl goes on as rapidly as her ability and industry can take her; she is placed in the business world the moment she is ready, and protected in her rights until her position is secure. We are interesting the employers in the training of the workers, and we are teaching the workers to respect the rights of the employers.

Since all this is true, we can only believe that a fine vocational school is a cultural school of a high type.

MR. W. A. NEILSON.—If I had come here this morning strongly in favor of the present trend of vocational education, I think my natural stubbornness would have been enough to make me take the opposite side, because, until Miss Leadbetter spoke, there was a somewhat oppressive monotony, in spite of eloquence.

A great many of the things that have been said I believe and believed before I came here, and do not know anyone who does not believe them. With many of the hopes of the speakers I sympathize. What I really want to know is the kind of thing Miss Leadbetter has told us, but also some things nobody has told us. I am uncertain now of the answer to the question on

the program. But no one here is likely to dispute the enormous value of the training Miss Leadbetter described.

But with regard to the actual things about which there are differences of opinion—let us look for a moment at the question of ambiguity of terms. I don't think there is any *practical* ambiguity in the way the question is stated. I think that the phrase is well chosen; we know when we are talking about vocational education that we are talking about education from the point of view of earning one's bread.

The question, I suppose, is, Does a steady growth such as we see in the present tendency to use the schools for the preparation of the pupils for earning bread tend to decrease the amount of that education, or the effectiveness of that education, which gives to pupils a larger intellectual horizon and a richer personality in those respects which do not discernibly tend toward a higher wage? If the vocational school were to be filled with the boys and girls who otherwise would have left school we all agree that it would be a very good thing, and anyone who knows the ideals of the vocational school knows that it is apt to be more favorable to culture than the ordinary workshop. Teachers are people of higher refinement than foremen of workshops. So the vocational school as an *addition* to the educational system is no threatening of cultural education but, on the contrary, a distinct strengthening of it. I cannot see any reason to discuss that farther, for it seems perfectly plain.

So I suppose that was not the question in the mind of the Executive Committee. I gather that that particular trend which the Committee had in mind is exhibited in the modification of the curriculum of the ordinary high school in the courses offered to the ordinary pupil, in opportunities for giving up the old "useless" studies in favor of studies that will tend to put him to work more quickly and to better purpose. Unless that tendency exists I don't think we have a debate. Nothing that has been said this morning about any other kind of proposition would, I think, raise any kind of difference of opinion in the staunchest upholder of the older traditions.

You do find, of course, in some communities the old cultural high school side by side with a building which is largely directed toward the producing of people industrially efficient; but the danger, if there is going to be one, is not in offering that special opportunity to take the place of the apprentice system, but only in the case of its encroaching on the field of the old cultural high school. In regard to that I am not yet convinced. Not one of the things said this morning has convinced me that, so far as the old curriculum is to be reduced in order to provide room for the technical subjects, that is not going to threaten liberal culture. If a boy has six units of time and energy to devote, and you take three and give them to teaching him shorthand, typewriting, and carpentry, he is going to have only half of his time for those studies which are of no use in money-making, but are of enormous use in other respects.

I differ from Mr. Holmes in regarding a man's vocation as necessarily the central relationship of his life, even if he spends ten hours a day at it. The central thing in life is not to be estimated in terms of hours. His vocation may be the central thing in a man's life, or it may not. It is so only when it is more than his vocation. I do not mean to deny in the least the beauty of carrying out your daily work with a vision of what it means, but one knows that in planning any system of education one has not got to deal in practice with such ideal personalities as Mr. Snow suggested. The boy trained from an early age for an industry is less likely to see the ideal sides of his occupation than if he had enjoyed a liberal education for some time longer. It seems to me that the stress has not been laid quite strongly enough upon what, after all, I think, is the valuable part of the older-fashioned training, the opportunity for the cultivation of imagination. It is not just knowing what people have thought and done in the past. It is the power of putting one's self in the place of as many different kinds of people as possible. Getting that kind of imaginative capacity is at the bottom of all kinds of culture.

Mr. Woods's argument was very largely on the ground that the college man was second-rate in business. I do not think that this is proved. But let me admit that we have in college a large number of men who had better not be there, who long ago ought to have gone to a vocational school or to serve an apprenticeship somewhere, because their personality is not of the sort to get the best out of books and out of the old kind of education. Anything that would take that kind of man out of college would be a god-send. If the vocational training can do that let us by all means make it as accessible as possible. I admit even that the older kind of training is for selected people, not selected for wealth or inherited opportunity, but selected for a certain sort of brain and ability. The danger lies only in reducing the proportion of people that will have the disinterested kind of earlier training; and in shortening their course, when they might have gone on and benefited from it much longer.

The question of the dignity of labor was brought up and emphasized by Mr. Woods. It is a very interesting question to me, because before I came to live here I always heard this country spoken of as a democratic country; and yet I find that the country in which I was born and brought up respected labor very much more than any community in the United States I have ever lived in. In my country people who came from families of good social grade were willing to dirty their hands. But the American boy does not want to work at anything which dirties his hands. The whole trend in this country is to let the new immigrant do that. What is the bearing of this particular training on that question? Will the giving of such education in the schools actually accustom the American child to think of hand labor as a sufficiently dignified thing to do? I should gather from what Mr. Woods said that those who know about it say that it will. So far, then, I say we must support

it heartily. Anything that will keep our born Americans from crowding into something of no use and turn them into productive beings would be an enormous advantage. But the doing of that does not require the drawing of people away from the cultural training in high schools, because that cultural training was not what made people anxious not to do dirty work. This is true, because that training has not so resulted in other countries.

The most important thing in education, from my point of view, is the personality of the teacher. I should like to know in the latter part of this discussion, from people having real experience about this, what the chances are of getting a good supply of teachers for technical subjects, who are likely to be men and women of such a personality as will do the kind of thing someone did for all of us somewhere in our education. Some teacher somewhere in our course gave us our start, our enthusiasm; and I do not think it matters a great deal what the subject was that person was teaching. The more closely connected a subject is with the earning of money, the harder it is to get good teachers of that subject; because the attraction to practice and earn money by it directly is so much the greater. In the professions this fact is notorious. For example, a law school situated in a large city can hardly get and hold good teachers. This Law School here is largely possible because we are not in Boston. Besides, there is a certain *esprit de corps* about the Harvard Law School which holds the teachers together. But you cannot get a first-rate man, except by the merest accident, to teach law in New York City, because while he is getting five thousand dollars at Columbia Heights he can get fifty thousand down town. Some men imagine that we are going to teach English in our colleges by having a staff of people who are expert novelists and essayists. Such a proposition is absurd. Imagine Mr. Winston Churchill coming down here, and giving up his city house and his two or three country houses and his four-in-hand and so on, and accepting the sort of salary I teach for. I teach literature because I cannot make it. A real master of creative literature is not going to come and teach it. So my inquiry here is, Are you going to get a man who is first-class in these various technical subjects, who will give up the enormous business opportunities open to him, for the salary of a schoolmaster? If not, you are certainly going to get only the second-rate people who can do that sort of thing. That this is not the case all along the line is because there is one argument for the old "useless" kind of study which is never made. It is this: I, if I am, am a good teacher because I cannot do anything else. The stuff that I have to sell is not salable in any other way. The master of the old subjects can sell them only in the scholastic markets, if his tastes have led him to study these things. Here we are in the position of being able to earn our bread only from teaching someone else. So, while we may not be a very good kind of people, there is nothing to hinder us from being the best of our kind; whereas these others are in danger of

being drawn into the great open market. Wherefore, I am afraid the vocational schools are not likely to get a continued supply of good teachers.

MR. J. Y. BERGEN.—I may as well define what I want to say by premising that it seems to me this question is too general; it concerns everything below the university or the highest kind of technical school. To me it appears that so far as the high schools of whatever name are concerned vocational training is not standing and is never likely to stand in the way of cultural training. In regard to the universities it may so stand, and I think it now does.

I believe that the average boy or girl in good health does not get in the ordinary high school more than half the work he or she is capable of doing without injury to health. I do not mean that they ought to spend more hours a day in purely scholastic work, in or out of school; but whereas the boy or girl of thirty or forty years ago had a great deal of useful labor to do out of school he now has hardly any. A boy leaves school, perhaps without going home to lunch, and goes to the ball ground or the tennis court, or down-town to amuse himself, or does any one of half a dozen other things which are neither cultural nor vocational. While the boy on the farm in my generation had farm work to do as soon as he got out of school, and the city boy had all kinds of things to do, from chores about the house to helping his father down-town at the store, the boy of today does not do any such things.

One of the most remarkable schools of its class in the United States is the St. Paul Manual-Training High School. The head-master assures me that he gets out of his boys and girls just as much book-work and liberal-culture work as is done in the English High School, where no manual training work is performed. The manual-training work supplies physical exercise with enough education to make it profitable and interesting, and those boys and girls are a great deal better off in doing shopwork of some kind than if they were forever on the ball ground or the croquet ground. If a school can be managed on that basis, manual-training work is not interfering with culture.

Another reason why I think that the manual-training work in our large cities is not an obstacle to culture is that in general the student with a strong predilection for cultural subjects is not likely to go in strongly for manual training, though of course there are exceptions. That being the case (and I speak from twelve years' experience in a large Boston high school), I should have regarded it as a godsend if half of our pupils could have been drawn off to any high school where they could learn to earn a livelihood. Then the other half who wanted to study the subjects which make directly for culture would have gained by the dropping of those who had to be brought forward by some kind of *vis a tergo*.

From every point of view it appears to me that the strong vocational

trend in the high schools is a good thing. In a few it is possibly overdone. A boy who came from an Indianapolis high school to Harvard took Professor Ostwald's lectures on theoretical chemistry in his first year. Such an institution ought not to be called a high school; it is too technical. There is a high school in Joliet, Illinois, where there are more ammeters and voltmeters than there were in the Jefferson Physical Laboratory, when I was there. Yet the city is a small one. I doubt whether that extreme really pays.

As regards the universities, I think the majority of the Western state universities which I have ever seen are overdoing the vocational side. They are distinctly an immense allied set of vocational schools. To be sure you can have cultural courses if you want them, but the great mass of work is done in engineering, agriculture, or other technical departments. These things must be done, and the state university has the right to do them; but my point is that it would be better if it were not necessary for so many young men to come to Harvard to get their cultural work. There is no reason for it. There are brains enough and money enough in any of the Middle states to equip departments in the state university which should be strongly and fully and highly cultural. But this has not usually been done. I think one reason why it is not more thoroughly done is that it would be hard to come before the state legislature and appeal for money for a cultural department with as much chance of success as for the technical ones. So I think Harvard for fifty years to come may draw boys from many of the Middle and Western states for various reasons, largely because there are nearly three centuries of culture here. But the beginnings ought to be made in the West, and made a good deal more vigorously than they now are.

Mr. H. W. Holmes.—When I say that the vocational relationship is the central relationship of a man's life, I mean that a man has got to support the other relationships of his life on the result of his efforts in the vocational relationship. That relationship is highest and most valuable, no doubt, which most calls out a man's power. As things are organized today it is true that most men cannot put most of themselves into their work, but are forced to express their natures most fully in their leisure. Their use of their imaginations, the disinterested, the high, the pure, and the valuable exercise of their powers, is not in their work but outside of it. They are most *men* outside of their work. But it ought not to be so. There are a few men who find themselves in a situation in which they can be themselves and express themselves in their work as completely and as greatly as they can in their leisure. Would that it were so for all men, so that not only practically but ideally, too, the vocational relationship might be central.

Mr. David Snedden.—I am afraid that I have come in somewhat as a discordant critic at the present moment. Much that has been called vocational

education here this morning is not and will not be vocational education in practice. The manual-training high school is not a vocational school and is not giving vocational training; nor are agriculture and household arts as ordinarily taught vocational. These subjects may make incidental contributions to vocational education as taught, but the controlling purposes are to be found in their contributions to liberal education. It seems to me that we shall have to agree on these matters of terminology before we can make much progress in discussion.

Anyone of us bears, roughly speaking, a twofold relation toward life; that of consumer and that of producer. The tendency of the age is toward causing the producer to operate in a more and more limited field. Would that it were not so! But in a vocational school such as Miss Leadbetter has charge of we can take the girl, touch her physical life, her home life, and her cultural life at many points, and thus broaden her vocational education.

But when we cease the vocational relationship which each one of us bears toward the world and go into such fields as history, science, literature, art, which lie outside the vocations of most of us, we come into the field of liberal education, and that liberal education is going to be more rather than less necessary to maintain a high standard of life, culturally and socially, among us. We must agree largely in the analysis that Professor Neilson has made of this point.

We must face the fact that the vocational education which is developing among us is going to threaten somewhat cultural education in certain fields, and especially in the high school and among the children of high-school age. It seems to me the extent to which liberal culture is to be threatened by vocational education will depend largely on what we are going to conceive as liberal education. As I see the situation, we must reorganize our processes of liberal education. The traditional subjects may in some cases be of doubtful value as contributing to this end. It is highly essential that the man of the city should somewhere touch agriculture as a part of his liberal education. All enrichment of a program of general education that simply takes a small share of the boy's time should be interpreted as a phase of liberal training. Today our colleges are building up new fields of liberal culture, of liberal education, but hardly recognizing them as such. Greek may be declining, but all the social sciences are gaining prestige in the American college and are contributing vitally to liberal education. These subjects will have to be introduced into the high-school courses. Unless the cultural high school meets more fully the requirements of the twentieth century it may be in danger. But if it does learn to adapt itself, it has a great future.

NEW REQUIREMENTS FOR ENTRANCE AND GRADUATION AT THE UNIVERSITY OF CHICAGO

JAMES ROWLAND ANGELL
The University of Chicago

For the past two years the faculty of the University of Chicago has been considering a somewhat radical revision of the curricula leading to its bachelor's degrees. In conjunction with the study of this problem the faculty has also turned its attention to the problem of entrance requirements. These two undertakings, although instigated by interests of divergent character, were at once seen to involve one another in the most intimate fashion. It has come about in consequence of this interconnection of the problems that the faculty has attempted a reconstruction of the entire course of study from the beginning of the high-school course to the completion of the work for the bachelor's degree. Before proceeding to an account of the program in force at the University after October 1, 1911, it may contribute to the intelligibility of the plan if the more central principles be stated; and first as concerns the high-school course.

Heretofore the University has formulated in a somewhat detailed way the precise subjects and the amount of each which it desired its students to present upon entrance. It is not necessary to recount the exact topics which were thus designated. Suffice it to say that the larger part of a student's high-school course was required to fulfil these obligations and that it was extremely difficult for a student to enter the University if he had not reached his decision so to do during the early years of his high-school work. The effect of these requirements upon the schools which attempted to train students for the University of Chicago was often seriously embarrassing. They found themselves on the one hand obliged to supply students with instruction in the particular subjects demanded by the University, and on the other hand they were increasingly subjected to pressure from

the communities about them to furnish larger opportunities for study in the subjects thought to be of a more practical character, especially such as were believed to be of a vocational kind.

From the side of the University the situation has had several drawbacks. It has resulted in the receiving of an abnormally large number of students with conditions of greater or less severity. It has brought to the University students whose training in one or another direction has been markedly inferior, because of the poor instruction which the school has been able to afford in some of the lines demanded by the University for entrance. It has exercised a disturbing influence over the first year of the work of such students in college, owing to their incapacity to carry forward the prescribed courses. This difficulty often extended beyond the first year, but its most serious consequences were generally to be marked at that point. Most unfortunate of all, perhaps, the situation has put the University in the position of interposing obstacles in the attempt of the schools to respond intelligently and sympathetically to the demands of their communities. We need not discuss at this point the wisdom or otherwise of some of these demands. Many of them are unquestionably well founded; and in any case the authorities of the schools find themselves obligated to meet the situation in some positive fashion rather than merely to evade it.

In the light of these considerations and others of a similar kind, the University has decided upon a distinct departure designed to remedy as many of these defects as possible and to secure certain other desirable ends thus far unmentioned. One practical measure which it proposes to put in operation at once should commend itself to the practical judgment of all. For many years the University has admitted students upon certificate from certain approved schools. These schools have been subjected to careful examination by the University school-inspector. New schools will hereafter be admitted to this list of approved institutions upon the recommendation of the inspector. But the retention of a school upon the list will be determined by the records which its students make after coming to the University. To this end it is proposed that at frequent

intervals the principal of each school shall be supplied with a transcript of the records of the students from that school in residence at the University. It will certainly be recognized that a test of this character is the only one at all fair or adequate to determine whether a school is doing the kind of work which will enable its students to pursue their studies in the University with advantage.

In this connection it may be added that the University proposes to inaugurate during the present year a system of visitation to its own classes on the part of the school principals and teachers engaged in giving instruction in the lines which are continued in the University. In other words, whereas it has hitherto been the practice for the University to inspect the schools, it is now proposed that the schools shall inspect the University. It need not be added that the fundamental purpose of such inspection is the securing of a more intelligent appreciation on the part of both the University teachers and the high-school teachers of the work which each is doing and of the obligations which may reasonably be imposed upon them. This plan is looked forward to with great hopefulness as a means of correction for many forms of misapprehension into which both school and college teachers fall regarding the conduct of the work in their own subjects.

The educational program to which the University has committed itself in the matter of the high-school course involves primarily the desire to co-operate with the schools in the most effective possible way, to release them from all arbitrary obligations to the college, and to assist them in their efforts to accommodate themselves to the new demands made by their constituencies. At the same time it is the strong conviction of the faculty of the University that within the so-called "academic" or regular subjects of the school curriculum is to be found the solid foundation upon which the best and strongest educational edifice is still to be built. It will be seen that this opinion is embodied in the requirements adopted. It has also been the intention to frame such requirements as will enable a serious-minded student, despite irregularities in his earlier training, to

decide at a relatively late point in his school course to come to college. On the other hand, it is strictly provided that each student shall bring to the University a sufficient *quantity* of thorough training to enable the University to begin its work without handicap. To this end it intends hereafter to admit no students with conditions. This provision, together with the severe system of elimination of unsatisfactory students during the first two years of the college course, affords adequate safeguard against any possibility that the quality of the University's degrees may suffer.

With these considerations in mind, we may next pass to a statement of the requirements themselves. A transcript from the action of the faculty will give this material in the briefest form.

Students applying for entrance to the University of Chicago present by certificate from approved schools or by examination 15 units of entrance credits. Among these must be 3 units of English and in addition 1 principal group of 3 or more units, and at least 1 secondary group of 2 or more units. These additional groups may be selected from among the following subjects:

1. Ancient Languages (Greek and Latin), it being understood that to make a group of 2 or of 3 units the work must be offered in a single language.

2. Modern Languages other than English; to make a group of 2 or of 3 units the work must be offered in a single language as under group 1.

3. Ancient History, Mediaeval and Modern History, English History, United States History, Civics, Economics.

4. Mathematics.

5. Physics, Chemistry, Botany, Zoölogy, General Biology, Physiology, Physiography, General Astronomy.

In group 5 not less than 1 unit may be offered in either Physics or Chemistry. Any combination of the subjects within each group is permitted.

Of the 15 units offered for entrance at least 7 must be selected from the subjects in groups 1 to 5. Not less than ½ unit may be offered in any subject.

The remaining 5 units may be selected from any subjects for which credit toward graduation is given by the approved school from which the student receives his diploma; but Greek, Latin, French, German [or any language other than English], Mathematics, Physics, and Chemistry, if offered, but not as above under 1 and 5, must each consist of at least 1 unit Latin may not be *continued in college* unless at least 2 units be offered.

SUMMARY OF ENTRANCE REQUIREMENTS

3 units of English.

3 or more units in a single group, 1–5.

2 or more units in another single group, 1–5.

2 units in subjects selected from any of the groups 1–5.

[Total 10 units in English and groups 1–5.]

5 units selected from any subjects accepted by an approved school for its diploma.

Not less than ½ unit will be accepted in any subject.

Entrance with conditions not permitted.

It will be seen upon examination of these requirements that English is the only subject definitely required of all candidates for entrance to the University. The reason for this specification is so obvious as to require no justification. Apart from this, the two most essential demands are, first, the presentation of two groups of subjects, of which at least three units shall be offered in one and at least two units in the other, and, second, the requirement that at least ten of the fifteen units offered shall be in the familiar academic subjects. These two stipulations are designed to bring the student to the University with a reasonable training in at least two lines of work other than English which have already established themselves in the confidence of the intelligent public and which the University is prepared to build upon with courses of its own. They are also intended to obligate the student to pursue at least two-thirds of his school work within the older and better established lines, although within these lines he has great latitude. On the other hand, five units of the student's preparation may be determined entirely by the authorities of the school, provided only that the subjects which are included in these five units be such as the school accepts for its own four-year diploma.

It will be noticed that the school is left the widest possible freedom, aside from the requirement in English, to build up curricula involving the older academic subjects in such ways as it may see fit, and that to the extent of five units it is given a perfectly free hand to introduce the newer and so-called vocational subjects, which are playing so important a part in the development of the modern high school.

Before entering upon the details of the college requirements a few words may be devoted to the educational principles involved. The University of Chicago has for many years recognized the work of the first two years as constituting a unit somewhat sharply marked off from the work of the last two years. It has recognized this distinction by conferring a certificate and a title upon the successful completion of the first two years of work, known as the curricula of the Junior Colleges. It is therefore introducing no novelty into its procedure when it recognizes in its new program a sharp division between the upper and the lower halves of the undergraduate work. It is intended that the work of the first college year shall connect directly with the work in the high school in order that there may be as little break as possible between the two. It is furthermore desired to provide that before the completion of the second year of the college course the student shall have secured a reasonable mastery over the written and the spoken forms of his mother tongue. It is also intended that before this point is reached he shall be in possession of a practical reading-knowledge of some modern language other than English. Finally, it is laid down that prior to this he shall have pursued studies to the extent of at least four full courses (each the equivalent of a half unit measured in terms of the preparatory course) in each of the following four great divisions of the field of knowledge: (1) philosophy, history, and social science, (2) modern languages other than English, (3) mathematics, (4) natural science. The obvious purpose of this last requirement is that no student may pass into the more specialized work of the Senior Colleges, the final two years of the undergraduate course, without some acquaintance with the materials and methods peculiar to each of these great realms of learning.

In order to procure these several results, the student is required to carry three courses during the three terms of his Freshman year which continue work that he has pursued to the extent of two or more units in the high school, or which he has followed to the extent of one unit during his final year in the school. There is nothing to prevent his choosing all the subjects

of his Freshman work in such a way as to continue studies begun in high school, but he is compelled to follow at least one to the extent of an entire year's work. This requirement is designed, not only to bridge over the transition from the high school to the college, but also to assure the possession by the student at the end of his first year of some reasonable proficiency in at least one subject. Like the requirement of a three-major and a two-major group in the high school, it represents the effort to emphasize continuity as a principle of prime educational importance —a principle much more significant, in our judgment, than is the pursuit of any particular subject-matter merely as such.

It is further provided that the student shall during the first two years of the college work pursue at least two courses in English composition and at least one course in public speaking. These requirements have been made by the University for many years, and experience appears to justify their retention.

It is not necessary to enlarge further on the so-called "distributive group requirement," in accordance with which a student is obliged to offer at least four courses in each of the four main departments of knowledge to which reference has been made.

It only remains to add that the requirement in modern language other than English is now put upon a basis somewhat different from that which it has ever before enjoyed in the University. A student may at any time during the first two years discharge this obligation by reporting himself to the examiner in the proper department; in case he shows satisfactory ability to read the language selected he will be relieved of all further requirement in the study of modern languages. We speak of this examination as an "efficiency test," and it is believed that not a few students will avail themselves of the opportunity to meet the requirement in this way, rather than by pursuing the four full courses which will otherwise be required in order to satisfy the modern-language departments of the candidate's ability successfully to read a modern language other than his own.

It will be understood that the "distributive group requirement" and the modern-language requirement may easily be met in the high school by a student who so chooses. For example,

history and a modern language pursued each to the extent of two units would meet the demands, although the University would itself test the attainments in the modern language either by an examination or by the student's ability to pursue a course more advanced than those taken in school.

The final two years of the college course are designed to give the student the very best opportunity which the University affords to achieve two ends: in the first place, to specialize in one or two lines of work with reference to the intensive cultivation of his intellectual tastes and the beginning of his professional training, should he be looking toward professional work of any kind; and, in the second place, to afford opportunity for a wide range of elective work enabling him to come in contact with realms of knowledge previously closed to him. To meet the first end it is provided that every student upon graduation must present at least nine coherent and progressive courses in some one subject and at least six in another. The remainder of his time is entirely his own to pursue such subjects as he may desire, it being understood that no student receives a bachelor's degree without completing four full years of college work at a certain standard grade of excellence, which, be it said, is above the grade necessary merely to pass a course. A student who has distributed his time in school and college most judiciously will find it possible to have about one-third of all his work elective, the remaining two-thirds being provided for under one or other of the requirements already laid down.

Students who are planning to enter upon work in law, or medicine, or education, or theology, are enabled under this plan to give the equivalent of their entire final undergraduate year to such work, to this extent shortening the period of their strictly professional training. Candidates for the degree of doctor of philosophy in any of the academical subjects are also enabled to begin their intensive specialization during the latter part of the college course. It is particularly hoped that the vocational interests of women may under this program be more intelligently and effectively worked out than has heretofore been the case. It should be understood, however, that the term "vo-

cation" is used here with a wider and more flexible meaning than generally attaches to it in connection with so-called vocational schools.

The details of this part of the plan do not lend themselves to ready presentation in a paper of this character, and the writer frankly foregoes any effort to describe the situation further. It may be said by way of illustration, however, that in the case of the A.B. degree the sequences of nine and six majors respectively are confined to Latin and Greek, and that the sequences in this case reach back to an earlier point than is true with the curricula for the S.B. degree, for example. The general principle, however, is one and the same.

Broadly speaking, therefore, the plan as a whole contemplates the introduction of a much larger flexibility into the high-school requirements than has previously existed, but with a rigid insistence upon a full fifteen units of entrance work. It contemplates emphasis upon concentrated and continuous work rather than upon specified subjects. In the college stage the early part of the course is devoted to completing the training begun in the school, in order that the student may have at the end of his second year those tools which the University regards as most indispensable for the successful and advantageous use of his final two years of work. The final years themselves are to be devoted to the beginning of intensive specialization, which may, to be sure, reach back into the earlier years of the college course, but which will certainly find its main significance in the closing period. It is thus hoped to make these years of maximal efficiency in preparation for the larger and later interests of life, and to insure that every student who goes out from the University shall have a considerable mastery of a solid and substantial kind over some one field of knowledge.

BOOK REVIEWS

The Educational Meaning of the Manual Arts and Industries. By ROBERT KEABLE ROW. Chicago: Row, Peterson & Co., 1909. Pp. 248.

This volume is well worth the careful study of all who are interested in seeing the manual arts assume their proper place in the schools. It is especially valuable to those engaged in teaching the manual arts, as it gives a clear conception of the psychological and educational values of handwork, a brief sketch of the historical development, some interesting laboratory tests to determine values in developing motor-control, and suggestions for a course of study.

In discussing the status of the manual arts in the United States the author does not feel that we have as yet gone very far beyond the "manual skill" idea and the preparation for trades, on which basis handwork first gained a place in the schools. These things are valuable but are not the chief reasons for the presence of the manual arts in the elementary schools. Due consideration is given to the value of handwork in developing and utilizing the fundamental impulses and interests which are too often ignored. The so-called "object-lesson" method is condemned. The manual-arts processes provide the natural method of sense-training.

By means of a series of tests with a specially constructed dynamometric saw-handle, progress in the development of motor-control was observed, the subjects ranging from university professors and graduate students to pupils in the elementary school. Some of the conclusions reached were as follows:

1. Concentrated attention is the fundamental factor in the development of motor control.

2. Strenuous effort is necessary in the early stages in the process of acquiring a new co-ordination. Admonitions to "hold the pen lightly" or to "let the saw run lightly" are wrong. "Strenuous effort is the direct line to motor control." To insist on a light grasp is to retard progress in co-ordination. Tension subsides as control increases, but in less marked degree with younger children. Therefore there is danger in making demands for complex adaptation before the child is ready for it.

3. Large muscles and nerves should be developed first, but work need not be confined to the large muscles after control has been obtained. This applies especially to writing, where the inhibition of the use of the finer muscles often produces fatigue. Direct interest is essential to motor control.

Intellectual, aesthetic, ethical, economic and industrial, and social values of the manual arts are discussed in separate chapters. It is pointed out that often "cut and dried directions remove need for thinking." "Academic studies should give intellectual training, but may be so taught as to require very little mental effort and may become a favorite resort for the intellectually lazy." Development is gained through reconstruction of experiences. Completed models provided by the teacher or dictated plans furnish "only a modicum of experience in a very unsatisfactory form. A large measure of initiative and self-direction may result

in grievous mistakes, but the pupils get the full benefit from their experiences." This is a principle which more manual-arts teachers should observe. On the ethical side the author says: "There can be no question that a training that gives a boy or a girl a sense of ability to control material things, that leads to frequent experience of satisfaction through producing something worth while, is a great moral force." Increased attention to manual arts, vocational training, and continuation schools is urged from an economic and industrial standpoint. On the social side it is pointed out that a proper recognition of the arts and industries will lead to a wiser choice of vocation by dignifying forms of manual labor.

A well-written discussion of some problems of method, which many manual-arts teachers would do well to read, and some suggestive courses of study conclude the volume.

L. W. WAHLSTROM

THE FRANCIS W. PARKER SCHOOL
CHICAGO

A History of Education in the United States since the Civil War. By CHARLES FRANKLIN THWING. Boston: Houghton Mifflin Co., 1910. Pp. vi+348. $1.25 net.

"In no part of our manifold human endeavor do the great movements and elements of the last forty years emerge more significantly than in the educational. . . . . Liberty, force, enrichment are the three conceptions which receive illustration in this history. . . . . This movement is akin to the educational revival of the fourth decade of the same century, and also, if the leap in time and place be not too long or too abrupt, it is not unlike the great English renaissance of the thirteenth century."

There has been need of a work in which a lay reader could gain a view of the educational movement in America during the last two generations. President Thwing's wide range of interests enables him to provide in this work a brief, clear, and untechnical statement of the facts, figures, and ideas of the period as they have been connected with the school. One follows here the story which involves the contributions of Agassiz, Bishop Vincent, Dio Lewis, Calvin Woodward, G. Stanley Hall, Francis W. Parker, W. T. Harris, Andrew Carnegie, and many others to whom our debt is great.

Among the chapter headings are: "History of Educational Thought," "Course of Study," "Changes in Collegiate Conditions," "Morals and Religion," "The Athletic Renaissance," "Material Education," "Indirect Education," "The Pension System," "The United States as a World-Power in Education," "Great Personalities."

FRANK A. MANNY

WESTERN STATE NORMAL SCHOOL
KALAMAZOO, MICHIGAN

Personal Hygiene and Physical Training for Women. By ANNA M. GALBRAITH. Philadelphia: W. B. Saunders Co., 1911. Pp. 371. $2.00 net.

The wave of interest in health education which has swept the country during the last few years has called forth a large amount of literature on the subject.

Much of this material is worthless, because it is the product of amateurs, radicals, and faddists. This volume of Dr. Galbraith's is one of the best and most complete books that have appeared on hygiene and physical training for women. The author's aim is "to present in a clear and concise manner the fundamental physiological laws on which all personal hygiene is based; together with the practical, detailed directions for the proper development of the body and the training of the physical powers to their highest degree of efficiency by means of fresh air, tonic baths, proper food and clothing, gymnastic and outdoor exercises, so that the tissues will be placed in the best possible condition to resist disease."

The first five chapters treat of hydrotherapy, the care of the skin, the hygiene of digestion, respiration, circulation, the sense organs, and the nervous system. A chapter is devoted to the hygiene of the mind and its relation to the physical health. The last three chapters deal with dress, the fundamental cause of woman's physical deterioration; physical training, the key to health and beauty; and symmetric development, good carriage, and grace of motion, through gymnastics and athletics.

The author has succeeded very well in presenting the essential facts of physiology and hygiene in a clear and interesting style. The chapters on physical training contain a variety of the best calisthenic exercises for developing all parts of the body, and a series of exercises with the chest weights. A large number of beautiful illustrations make it possible for anyone to learn these exercises correctly by practicing them before a mirror.

The Ninth Yearbook of the National Society for the Study of Education. Part II. *The Nurse in Education.* By THOMAS DENISON WOOD, M. ADELAIDE NUTTING, ISABEL M. STEWART, AND MARY L. READ. Chicago: The University of Chicago Press, 1911. Pp. 76. $0.75.

This pamphlet contains an introduction by Dr. Wood, a monograph on the educational value of the nurse in the school, by Miss Stewart, with the cooperation of Miss Nutting, and a short article on the professional training of children's nurses, by Miss Read.

In the introduction Dr. Wood states the problems which have arisen out of the great health movement of the present day, and the relation of the school nurse to the solution of these problems. Of results already accomplished, he says: "Not only has the nurse more than fulfilled expectations regarding the professional services which she was specifically appointed to render, but she has rapidly developed forms of hygienic service, social and educational, to pupil, home, school, and community, which have naturally grown out of the wonderful opportunities inherent in her work."

The monograph by Miss Stewart is a most valuable and timely presentation of the school-nurse movement, which is a comparatively new institution in American public schools. The first school nurses in the United States were those appointed by New York City in 1902. Since that time, many other cities have adopted the plan, but there has been very little uniformity in organization and methods. Educators and physicians engaged in public-school work will find this monograph very helpful in working out the school-nursing problem. The

author states the problem thus: "The health of well children should be protected and conserved, defects which interfere with mental development should be treated and, so far as possible, cured, that the school environment and educational method may at least not contribute to ill health." The solution offered for this problem is the appointment of trained school nurses as health supervisors, following the precedent already established in appointing trained specialists for the teaching of art, normal training, music, physical education, domestic science, etc. The history and development of the movement to provide school nurses is described in considerable detail.

The functions of the school nurse are many and varied; the chief ones are (*a*) assistance to the school doctor in his visits of inspection, preparing children for examination, recording data, testing hearing, vision, etc.; (*b*) routine inspection of classrooms, and treatment of minor ailments and accidents; (*c*) instruction of children in personal hygiene and sanitation; (*d*) work in the homes —notifying physicians, instruction of mothers in the care of children, taking children to dispensaries, dental clinics, etc., for treatment, when necessary. The school nurse also co-operates with physicians and committees in fighting tuberculosis and infant mortality.

The last two sections of this monograph contain much practical information concerning the organization and administration of school nursing and the preparation of the school nurse.

In the article on the professional training of children's nurses, Miss Read emphasizes the need for intelligent and trained caretakers of little children, either in private homes or in institutions. A serious obstacle to progress in attracting capable young women to this new profession is the practice of treating nursery maids as domestic servants, calling them by their first names, and having them eat their meals in the kitchen with other servants. Miss Read reviews the situation in England and America, showing what is being done now and making suggestions for future development.

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Constructive Exercises in English. By MAUDE M. FRANK. New York: Longmans, Green & Co., 1909. Pp. x+154.

High School English: Book One. By A. R. BRUBACHER AND DOROTHY E. SNYDER. New York: Charles E. Merrill Co., 1910. Pp. xv+355. $1.00.

Enlarged Practice-Book in English Composition. By ALFRED M. HITCHCOCK. New York: Henry Holt & Co., 1909. Pp. xiv+374. $1.00.

That the teaching of composition in the high school would profit by simplification is explicitly recognized, at least in the prefaces, by the writers of these three books. The test of the pudding, however,—. And these books differ markedly, in the texts themselves, as to what simplification means. The problem is not a simple one, and therefore it is with as much humility as is consistent with a reviewer's omniscience, that a suggestion is here made toward an analysis of the situation.

It is possible to make high-school students learn, more or less by rote, whatever is set before them. Some things it is valuable to learn by rote and some things it is not. This distinction might reasonably be drawn between things which are more or less arbitrary and things which appeal to the reason—between facts and principles. In the study of English the division would fall between the study of English usage and the principles of composition. The former—usage—is clearly teachable. A knowledge of usage, then, because of its intrinsic fundamental value, and because of its undisputed teachableness, the high-school book may without doubt try to inculcate. The extreme of simplification would be to reduce the text to these matters. And one wonders at times whether there is anyone who would object to the English of a high-school graduate, whether in college or not, whose training had gone no farther than to enable him to make a perfect manuscript, to spell and capitalize and punctuate correctly, to use perfect grammar, to write a properly constructed sentence, and to use words with a precision commensurate with his maturity. These matters are arbitrary, and can be taught. There is certainly a question as to whether anything more should be taught until these matters are well established.

The high-school student, however, has a reason as well as a memory. What has complicated the teaching of high-school English has been the degree to which this reason has been depended upon—the degree to which the principles of composition have been involved. Everyone who really writes knows how intimately and subtly the principles of his art are related to the individual body of ideas with which he is at any one time grappling; and knows how subtly the same principle varies in its application to different ideas and different kinds of writing. To learn these things by rote is fatal. The question as to the average high-school student is, Does he really have the body of thought which will vitalize the principle? That he can be made to learn it as a rule there is no doubt, but that he can be made to feel its vital worth in guiding his thought is a matter of grave question. The usual result of such teaching, if it is carried on extensively, is the premature sophistication of the student to a technical vocabulary which he does not vitally understand, and the dulling of his ability to learn, later, when his thought has created a need for the instruction. If he never receives later instruction his case is all the worse.

The *Constructive Exercises in English* is almost wholly devoted to those matters which have to do with the reasoning powers of the students in the application of the principles of composition to mature bodies of thought. The exercises and illustrations are the stuff of mature minds.

High-School English is far better adapted to the end it has proposed for itself. Part I, which comprises one-half of the book, is concerned with grammar, and a full third of the rest is devoted to the simpler aspects of composition treated without technical terms. Even the chapters on the forms of discourse do not go very far beyond what the intellectually more mature student could be made to understand. There is, however, an ominous note in the legend "Book One" on the title page. Are the writers really going to commit such folly?

The *Enlarged Practice-Book* has done still better in adjusting its teaching to the minds of its readers. It begins by giving them, without technical terms and with simple and stimulating illustrations, some of the simpler and more

obvious directions as to how to proceed in the various kinds of writing. Most of the rest of the book is devoted to matters of English usage. Even the rhetorical parts of it are limited to such simple concerns, and done in such simple language, that there is little appeal to what the student could not understandingly apply to his own writing.

Prose Literature for Secondary Schools: With Some Suggestions for Correlation with Composition. Edited by MARGARET ASHMUN, with an Introduction by WILLARD G. BLEYER. Boston: Houghton Mifflin Co., 1910.

The object of this book is to provide models—for the most part narrative models—for imitation in composition. Just why in the whole rich range of English literature it should be so almost exclusively American in its selections, and why in the fair field of American literature it should hit upon the jejune, the ill-constructed, the intolerably wordy "Goliath" of T. B. Aldrich, or one of the least significant stories of all the wealth of Hawthorne, are questions not to be answered by consulting the merits of the case. The rest of the selections are, however, good reading, chosen for their simplicity and directness. Each number is followed by notes, suggestive questions, and a list of allied theme topics. If there is a journalistic implication in the questions they at least inculcate the virtues of journalism. The selections from Thoreau, Irving, and Francis Parkman are especially good.

How to Teach English Classics: Suggestions for Study, Questions, Comments, and Composition Assignments on the Books for Careful Study on the List of College Entrance Requirements. By CHARLES SWAIN THOMAS. (The Riverside Literature Series.) Boston: Houghton Mifflin Co., 1910. Pp. iv+132. $0.15.

This handy little book, in addition to a suggestive introductory essay on the "Principles in Teaching English" and a suggested "Course of Study in English for High Schools," contains questions and comments on Milton's minor poems, *Macbeth*, Burke's *Speech on Conciliation*, Washington's *Farewell Address*, Webster's *First Bunker Hill Oration*, Carlyle's *Burns*, and Macaulay's *Johnson*. The questions and suggestions are unusually well calculated to get at the significance of the classics studied. Such vulgarization as is contained in the direction to write a modern newspaper account of Macbeth's murder is comparatively rare. The book is written for teachers rather than for students, and such things may be suppressed in transit.

SHERLOCK B. GASS

THE UNIVERSITY OF NEBRASKA

BOOKS RECEIVED

EDUCATION AND PSYCHOLOGY

Craftsmanship in Teaching. By WILLIAM CHANDLER BAGLEY. New York: Macmillan, 1911. Pp. ix+247. $1.10.

Administration of the College Curriculum. By WILLIAM T. FOSTER. Boston: Houghton Mifflin Co., 1911. Pp. xiv+390. $1.50.

Annals of Educational Progress in 1910: A Report upon Current Educational Activities throughout the World. By JOHN PALMER GARBER. (Lippincott's Educational Series, edited by M. G. BRUMBAUGH.) Philadelphia: J. B. Lippincott Co., 1911. Pp. 396. $1.25 net.

Principles of Education, Applied to Practice. By W. FRANKLIN JONES. New York: Macmillan, 1911. Pp. xi+293. $1.10 net.

Latin and Greek in American Education: With Symposia on the Value of Humanistic Studies. Edited by FRANCIS W. KELSEY. New York: Macmillan, 1911. Pp. x+396. $1.50.

Teachers College, Columbia University, Contributions to Education. No. 38. *Spinoza as Educator.* By WILLIAM LOUIS RABENORT. Pp. viii+87. No. 40. *A Special Study of the Incidence of Retardation.* By LOUIS H. BLAN. Pp. vi+111. No. 41. *The Social Composition of the Teaching Population.* By LOTUS DELTA COFFMAN. Pp. vi+87. No. 42. *Progress through the Grades of City Schools: A Study of Acceleration and Arrest.* By CHARLES HENRY KEYES, Pp. iv+79. New York: Teachers College, Columbia University, 1911. $1.00 each.

United States Bureau of Education Bulletins, 1911. No. 2, Whole Number 447. *Opportunities for Graduate Study in Agriculture in the United States.* By A. C. MONAHAN. Pp. 16. No. 4, Whole Number 450. *Report of the Commission Appointed to Study the System of Education in the Public Schools of Baltimore.* Pp. 112. Washington: Government Printing Office, 1911.

Introduction to Psychology. By ROBERT M. YERKES. New York: Henry Holt & Co., 1911. Pp. xii+427. $1.60.

An Introductory Psychology: With Some Educational Applications. By MELBOURNE STUART READ. Boston: Ginn & Co., 1911. Pp. viii+309. $1.00.

Educational Psychology Monographs. *Spelling Efficiency in Relation to Age, Grade and Sex, and the Question of Transfer: An Experimental and Critical Study of the Function of Method in the Teaching of Spelling.* By J. E. WALLACE WALLIN. Pp. viii+91. *When Should a Child Begin School? An Inquiry into the Relation between the Age of Entry and School Progress.* By W. H. WINCH. Pp. iv+98. Baltimore: Warwick & York, 1911.

ENGLISH

Specimens of Letter-Writing. Selected and Edited by LAURA E. LOCKWOOD and AMY R. KELLY. (English Readings.) New York: Henry Holt & Co., 1911. Pp. xli+274. $0.75.

Selections from the Letters, Speeches, and State Papers of Abraham Lincoln. Edited with Introduction and Notes by IDA M. TARBELL. (Standard English Classics.) Boston: Ginn & Co., 1911. Pp. xxvii+124. With a portrait. $0.30.

The Farewell Address of George Washington and the First Bunker Hill Oration of Daniel Webster. Edited by FRANK W. PINE. (The Gateway Series, edited by HENRY VAN DYKE.) New York: American Book Co., 1911. Pp. 49+54+vii+vii. $0.30.

Byron's Fourth Canto of Childe Harold, The Prisoner of Chillon, and Other Poems. Edited with Notes and Introduction by H. E. COBLENTZ. (Longmans' English Classics, edited by ASHLEY H. THORNDIKE.) New York: Longmans, Green & Co., 1911. Pp. xx+138.

Shakespeare's Hamlet. Edited by A. W. VERITY. (The Pitt Press Shakespeare for Schools.) Cambridge, England: The University Press, 1911. Pp. lviii+262. 1*s.* 6*d.*

The Granta Shakespeare. Edited by J. H. LOBBAN. *The Winter's Tale.* Pp. xvi+178. *First Part of King Henry IV.* Pp. xx+172. Illustrated. Cambridge, England: The University Press, 1910. $0.30 each.

Virgil's Aeneid. Books I, II, and VI. Translated by JOHN DRYDEN. Edited by A. HAMILTON THOMPSON. Cambridge, England: The University Press, 1911. Pp. xxiii+136. $0.40.

Teubner's School Texts. Standard English Authors. General Editors, F. DOERR, H. P. JUNKER, M. WALTER. *History of the Armada.* By JAMES ANTHONY FROUDE. Edited by J. W. E. PEARCE, with the Assistance of E. RIEDEL. Text, pp. iv+112. With three maps and two full-page illustrations. M. 0.80. Notes, pp. 54. With one full-page sketch. M. 0.50. *Shakespeare's Merchant of Venice.* Edited by FREDERIC W. MOORMAN, with the Assistance of G. H. SANDER. Text, pp. iv+90. With portrait. M. 0.60. Notes, pp. 56. M. 0.50. *Carnegie's Empire of Business* (Selections). Edited by HENRY CAVE AYLES CARPENTER, with the Assistance of HERMANN LINDERMANN. Text, pp. vi+96. With a frontispiece and two full-page illustrations. M. 0.60. Notes, pp. vi+60. With two maps. M. 0.60. Leipzig: Teubner, 1911.

English Readings for Schools. General Editor, WILBUR LUCIUS CROSS. *Arnold's Sohrab and Rustum and Other Poems.* Selected and Edited by WALTER S. HINCHMAN. Pp. xxviii+98. *Poems of Robert Browning.* Selected and Edited by CHARLES W. HODELL. Pp. xxxii+182. *Scott's Lady of the Lake.* Edited by ALFRED M. HITCHCOCK. Pp. xxx+193. *Shakespeare's As You Like It.* Edited by JOHN W. CUNLIFFE and GEORGE ROY ELLIOTT. Pp. xxx+162. *Stevenson's Treasure Island.* Edited by STUART P. SHERMAN. Pp. xlvi+258. *Washington's Farewell Address and Webster's First Bunker Hill Oration.* Edited by WILLIAM EDWARD SIMONDS. Pp. xlv+65. *Poems by Wordsworth, Coleridge, Shelley, and Keats.* Selected and Edited by JAMES WEBER LINN. Pp. lvii+215. Each volume illustrated. New York: Henry Holt & Co., 1911.

The Concise Oxford English Dictionary. Adapted by H. W. FOWLER and F. G. FOWLER from *The Oxford Dictionary.* Oxford: The Clarendon Press, 1911. Pp. xii+1041.

LATIN, FRENCH, AND GERMAN

A Latin Primer. By H. C. NUTTING. New York: American Book Co., 1911. Pp. 240. $0.50.

Camillus, and Other Stories from Livy. Edited with Introduction, Maps, Notes, and Vocabulary by G. M. EDWARDS. (Pitt Press Series.) Cambridge, England: The University Press, 1911. Pp. xvi+124.

Two Latin Plays for High-School Students. By SUSAN PAXSON. Boston: Ginn & Co. 1911. Pp. xii+39. $0.45.

The Poetry of Victor Hugo. For the Use of Schools and Colleges. By PELHAM EDGAR and JOHN SQUAIR. Boston: Ginn & Co., 1911. Pp. xvii+330. $0.90.

Mémoires d'un Collégien. Par ANDRÉ LAURIE. Edited with Exercises, Notes, and Vocabulary by O. SUPER. (Heath's Modern Language Series.) Boston: D. C. Heath & Co., 1911. Pp. iii+219. $0.50.

Vetter Gabriel. Novelle von PAUL HEYSE. Edited with Introduction, Notes, and Vocabulary by ROBERT N. CORWIN. New York: Henry Holt & Co., 1911. Pp. xi+216. $0.35.

Der Talisman. Dramatisches Märchen in vier Aufzügen. Von LUDWIG FULDA. Edited with Introduction, Notes, Questions, and Vocabulary by OTTO MANTHEY-ZORN. Boston: Ginn & Co., 1911. Pp. xxiii+239. With portrait. $0.45.

HISTORY AND COMMERCIAL GEOGRAPHY

The New Europe. 1789–1889. With Short Notes, Bibliographies, Biographies, Diagrams, and Maps. By REGINALD W. JEFFERY. Boston: Houghton Mifflin Co., 1911. Pp. xvi+401. $2.50.

Vanished Arizona. Recollections of the Army Life of a New England Woman. By MARTHA SUMMERHAYES. 2d ed. Salem, Massachusetts: The Salem Press, 1911. Pp. 319. $1.50.

Commercial Geography. By ALBERT PERRY BRIGHAM. Boston: Ginn & Co., 1911. Pp. xvi+469. Illustrated. $1.30.

MATHEMATICS AND SCIENCE

The Teaching of Geometry. By DAVID EUGENE SMITH. Boston: Ginn & Co., 1911. Pp. v+339. Illustrated. $1.25.

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The Doctrine of Evolution: Its Basis and Its Scope. By HENRY EDWARD CRAMPTON. (Columbia University Lectures.) New York: The Columbia University Press, 1911. Pp. ix+311. $1.50.

Plant Physiology, with Special Reference to Plant Production. By BENJAMIN M. DUGGAR. (The Rural Textbook Series, edited by L. H. BAILEY.) New York: Macmillan, 1911. Pp. xv+516. Illustrated. $1.60 net.

The Animals and Man. An Elementary Textbook of Zoölogy and Human Physiology. By VERNON LYMAN KELLOGG. New York: Henry Holt & Co., 1911. Pp. xii+495. $1.25.

Introductory Science. An Elementary Course in Some of the Principles of Physics, Chemistry, and Physiography. By the Teachers of Science in the Bridgeport High School. Bridgeport, Connecticut, 1911. Pp. 73. With a portrait.

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CURRENT EDUCATIONAL LITERATURE IN THE PERIODICALS[1]

IRENE WARREN
Librarian, School of Education, The University of Chicago

ABERDEEN, THE COUNTESS OF. The woman's national health association of Ireland and infant welfare. Child 1:759–72. (Je. '11.)

ANDREWS, BENJAMIN R. The girl of tomorrow: what the school will do for her. World's Work 22:14526–30. (Je. '11.)

ARNOLD, F. S. Thomas Arnold of Rugby. Child 1:711–14. (My. '11.)

BALDWIN, BIRD T. The psychology of mental deficiency. Pop. Sci. Mo. 79:82–93. (Jl. '11.)

BARKER, D. WILSON. The Thames nautical training college, H.M.S. "Worcester." Child 1:715–22. (My. '11.)

BERGENGREN, RALPH. Free dentistry for poor children. Tech. World M. 15:664–66. (Ag. '11.)

BETZ, W. College entrance requirements in modern languages. School R. 19:406–9. (Je. '11.)

BIGELOW, MARGUERITE OGDEN. The girl of tomorrow and her education. Craftsman 20:241–49. (Je. '11.)

BILLIARDE, F. J. Winnipeg and the child welfare exhibit. Child 1:845–58. (Jl. '11.)

BISHOP, J. REMSEN. The poor results in Latin teaching. Educa. R. 41:489–98. (My. '11.)

BLAYNEY, THOMAS LINDSEY. The modern languages as cultural college disciplines. Educa. R. 41:478–88. (My. '11.)

BRIDGE, JOHN C. The Dunfermline school clinic. Child 1:680–86. (My. '11.)

BROOME, EDWIN C. The attitude of the teacher towards his profession. Educa. 31:604–13. (My. '11.)

[1] *Abbreviations.*—Amer. Physical Educa. Rev., American Physical Education Review; Atlan., Atlantic; Cent., Century; Chaut., Chautauquan; Educa., Education; Educa. Bi-mo., Educational Bi-monthly; Educa. R., Educational Review; Educa. T., Educational Times; Journ. of Educa. (Bost.), Journal of Education (Boston); Journ. of Educa. Psychol., Journal of Educational Psychology; Kind. Mag., Kindergarten Magazine; Lit. D., Literary Digest; Liv. Age, Living Age; Nature Study Rev., Nature Study Review; Out., Outlook; Pedagog. Sem., Pedagogical Seminary; Pop. Sci. Mo., Popular Science Monthly; Psychol. Clinic, Psychological Clinic; Pub. Lib., Public Libraries; Relig. Educa., Religious Education; R. of Rs., Review of Reviews; School R., School Review; School W., School World; Tech. World M., Technical World Magazine.

BUTLER, NICHOLAS M. The Kahn foundation for the foreign travel of American teachers. R. of Rs., 44:47–48. (Jl. '11.)

BYERS, J. P. Needed legislation. Training School (N.J.) 8:33–37. (My. '11.)

CARRIGAN, THOMAS C. The law and the American child. Pedagog. Sem. 18:121–83. (Jl. '11.)

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CLEGHORN, ISABEL. A system of national education. School W. 13:181–84. (My. '11.)

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CURTIS, HENRY S. Playground training. Amer. Physical Educa. Rev. 16:302–8. (My. '11.)

DEAN OF NORWICH. On being more Froebelian than Froebel. Child Life 13:135–39. (Je. '11.)

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ELIOT, CHARLES W. The differentiation of the high-school course in English. Educa. 31:639–45. (Je. '11.)

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FARRINGTON, FREDERICK ERNEST. National union of teachers of England and Wales. Educa. R. 42:54–59. (Je. '11.)

FAUNCE, W. H. P. Choosing teaching as a profession. Educa. 31:599–603. (My. '11.)

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GIBSON, CHARLES R. The teaching of science for children. Child 1:693–95. (My. '11.)

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GLYNN, FRANK L. The practical public school. World's Work 22:14721–25. (Ag. '11.)

GODDARD, HENRY H. Two thousand normal children measured by the Binet measuring scale of intelligence. Pedagog. Sem. 18:232–59. (Jl. '11.)

GRAY, HENRY DAVID. The poor professor. Educa. R. 42:29–47. (Je. '11.)

GROSSMAN, LOUIS. Jewish religious education. Relig. Educa. 6:276–81. (Ag. '11.)

GULICK, LUTHER H. Measurements as applied to school hygiene. Journ. of Educa. Psychol. 2:301–5. (Je. '11.)

HALE, WILLIAM GARDNER. The harmonizing of grammatical nomenclature in high-school study. School R. 19:361–82. (Je. '11.)

HANCOCK, JOHN A. The place of reasoning in teaching. Pedagog. Sem. 18:184–96. (Jl. '11.)

HARPER, CHARLES F. What constitutes preparation for college: the high-school view. Educa. 31:585–98. (My. '11.)

HEMENWAY, H. D. Gardens for children. Child 1:787–90. (Je. '11.)

HICKMAN, J. E. How to reach the individual student. Educa. 31:663–68. (Je. '11.)

HILL, DAVID S. Comparative study of children's ideals. Pedagog. Sem. 18:219–31. (Jl. '11.)

HILLIS, MRS. NEWELL D. The girl graduate. Out. 98:548–52. (8 Jl. '11.)

HOLMES, W. H. How the college entrance certificate board can help the high school. Educa. 31:567–77. (My. '11.)

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How Chicago manages her art. Lit. D. 42:1199. (17 Je. '11.)

JESSE, RICHARD HENRY. Some helpful educators. Educa. R. 42:20–28. (Je. '11.)

JOHNSON, G. E. Play as a moral equivalent of war. Amer. Physical Educa. Rev. 16:291–301. (My. '11.)

JOHNSON, RALPH L. A score of difficult boys. Psychol. Clinic 5:121–27. (Jl. '11.)

JONAS, J. E. B. Intra-national exchange of teachers. Educa. R. 42:60–70. (Je. '11.)

JONES, W. FRANKLIN. An experimental-critical study of the problem of grading and promotion (1, 2). Psychol. Clinic 5:63–96, 99–120. (My., Je. '11.)

KING, CHARLES A. Vocational training in the public schools. Educa. 31:657–62. (Je. '11.)

KIRK, JOHN, AND OTHERS. Child problems: the national insurance bill and child welfare. Child 1:885–88. (Jl. '11.)

KOCH, MRS. C. VON. Chautauqua—a center of popular education. Chaut. 63:32–39. (Je. '11.)

LANKESTER, RAY. Compulsory science versus compulsory Greek. Liv. Age 51:606–18. (3 Je. '11.)

MCCURDY, J. H. Play and physical education for boys over ten. Amer. Physical Educa. Rev. 16:315–20. (My. '11.)

MACKENZIE, WM. D. Standardization of theological education. Relig. Educa. 6:253–61. (Ag. '11.)

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MANNY, FRANK A. The elementary school curriculum. Kind. Mag. 23:247–52. (My. '11.)

MATHENY, W. A. The common drinking cup. Pedagog. Sem. 18:205–13. (Jl. '11.)

MEIKLEJOHN, ALEXANDER. What constitutes preparation for college: the college view. Educa. 31:578–98. (My. '11.)

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MILLNER, A. The problem of Jewish education. Pedagog. Sem. 18:214–18. (Jl. '11.)

MONTGOMERY, THOMAS H., JR. Expansion of the usefulness of natural history museums. Pop. Sci. Mo. 79:36–44. (Jl. '11.)

MOORE, CLIFFORD H. A new plan of admission to Harvard college. Educa. R. 42:71–78. (Je. '11.)

MOSES, MONTROSE J. The New York public library. R. of Rs. 43:701–8. (Je. '11.)

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